The Light Plane and PRIVATE OWNER

1/6

Vol. 2 FEBRUARY, 1949 No. 11

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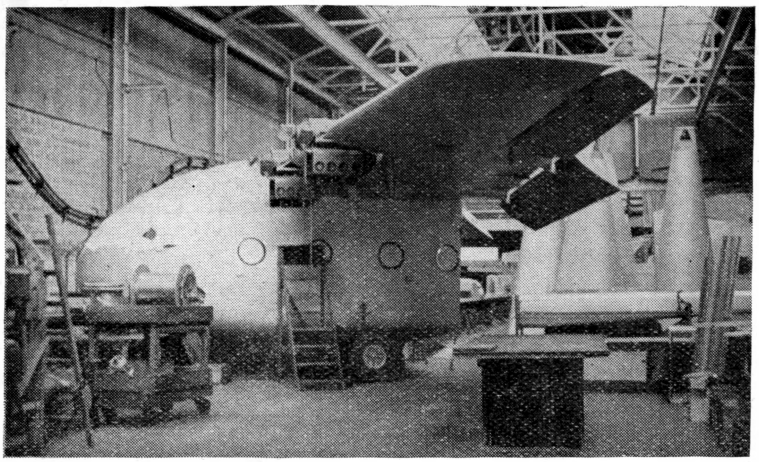


An exclusive photograph, never before published, of the only Aerovan to be built with four motors. Powered with four Blackburn Cirrus Minors, this Aerovan was nearing completion at Reading at the time of the collapse of Miles Aircraft, Ltd. Its present fate is uncertain.

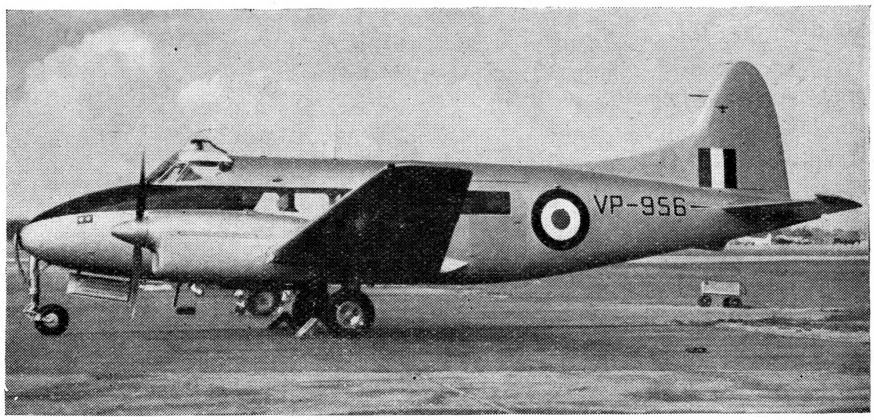
Central African Airways, trying to dispose of their Doves, plan to replace them with ex-Congo Lodestars.

Capital Airlines' 23 DC-3's are being converted from 21 to 24-seaters, by the abolition of galleys. Novel incorporation is new "swing down" stair door.

Convair XP-92 delta wing "fighter research aircraft" has made over 30 flights; it had to make 20 before it could land at less than 200 m.p.h.

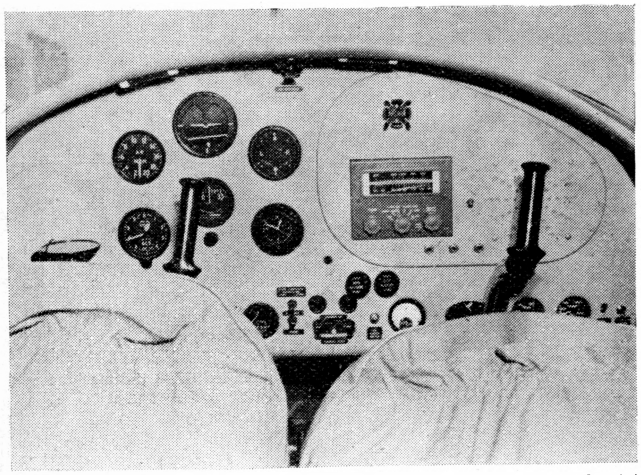
The de Havilland D.H. 104 Devon.

The de Havilland Devon, Service version of the Dove is now rolling off the production lines at Hatfield, and well over 20 have made their first flights. The Devon differs from the Dove in having additional radio equipment, and a less luxurious interior; performance remains unchanged. Devons are used by the R.A.F., the air forces of India and Rhodesia, Royal New Zealand Air Force, South African Air Force, Royal Swedish Air Force, Royal Iraqui Air Force, The Argentine and the Royal Egyptian Air Force for crew training and V.I.P. communications. As can be seen from the photograph, even R.A.F. markings cannot disguise a bird of peace. This particular aircraft, VP956, photographed at Hatfield, is apparently a V.V.I.P. machine, and has a de luxe interior. It is interesting to note that although it is a service machine, the D.H. trade mark remains on the fin.



Czech airlines have bought two Russian IL-12 24-passenger transports and are negotiating for the purchase of four IL-18 70-seaters for their Indian route. Russian internal airlines are reported to be using over 200 IL-12's.

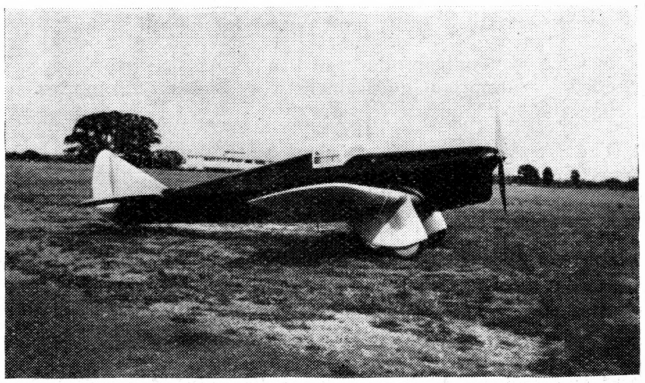
One of the two Republic XF-12 Rainbows so far built recently crashed in Florida; the remaining machine will soon be flying again, when repairs following a belly-landing have been completed.



Photograph shows General Electric two-way radio installed in a Miles Gemini. This aircraft was demonstated in North America in 1947 and before it could be permitted to cross into the U.S.A. from Canada, U.S. regulations necessitated the fitting of radio equipment. The Gemini was flown into Avro Canada's Malton works late one afternoon, and was test flown by S/Ldr. Jimmy Nelson, A.F.C., next morning, Avro's having worked all night in fitting the radio installation.

Being prepared for a demonstration tour of Africa is the second Percival Prince, G-ALFZ; four other Princes are under construction. The Merganser fuselage exhibited at Paris in 1947 is being used to try out Prince colour schemes and "cheat lines." The one and only Merganser has been broken up for scrap.

A small number of D.H. Drovers have been ordered by British charter operators. The parent company expect an example in the summer.



We regret to have to record the end of G-ADGP, the one and only remaining Miles Hawk Speed Six, property of Ron Paine of Wolverhampton. 'DGP, although 14 years old, was fast gaining a reputation for being fast. In 1947's Isle of Man Air Races, Tommy Rose brought her home first at 182 m.p.h.; a month earlier he came second in the Portsmouth race. The circumstances of the accident are unknown to us, but the wreckage may be seen at Blackbushe Airport. Our photograph shows 'DPG as she was in 1938—up for sale at £850. Miles rescued it from storage in a London shop at the end of the war, and transfixed it to the guise with which our readers are familiar by fitting a bulbous hood. When offered, in 1946, the price tag was £2,000.

The Technique of Taxying

REDUCED to its simplest definition, taxying is merely the job of moving an aeroplane, under its own power, from one part of the aerodrome or airport (according to your year of birth and degree of devotion to M.C.A.'s terminological rulings). Just that and no more—until you come to try with various types under various conditions and accordingly find out how very much more there is to be known about taxying—as apart from mere "shifting" a groundborne aeroplane from A to B. Yet there are many pilots, even in the professional and presumably experienced category, who treat the matter as one unworthy of more than the minimum of consideration. As for the amateurs there are the few who continue flying long enough and who are sufficiently interested to find out for themselves, but the majority are of more ordinary stuff and have to be taught, step by step. More truthfully they *should* be taught: in only too many cases they are not. This important item in the training curriculum is denied the pupil in too many cases—it saves time and money! In the author's own early days, twenty-odd years ago, the first genuine taxying he ever did was when he was sent solo, as even when taxying the instructor the latter was always "there," his hands or feet insidiously interfering.

It is true that modern design trends will, as they become universal, reduce in order of importance, or even delete altogether some aspects of the art. A low-wing monoplane with a reasonable wing loading, brakes and a tricycle undercarriage is a totally different proposition from a lightly loaded biplane without brakes and the other usual refinements. It is, nevertheless, a good thing to learn the business the old way from the elementary principles up. After all, a car is designed for use by ordinary men and women on the surface of the earth, but even so there is quite a lot to be learned before driving it safely and efficiently about the aforesaid surface of the aforementioned earth.

First Principles

Without knowing better it may reasonably be asked, "What is all this hoo-ha about taxying? Why not just open the throttle and go? The average aerodrome (or airport) is big enough in all conscience." And so it would seem, but the complications are found as follows: Firstly, the majority of aeroplanes are most unhandy things on the ground, however agile and responsive they may be in the air. Secondly, and very important, very many aeroplanes are extremely "blind" for taxying purposes. Thirdly, although airfields are usually so spacious, they generally contain many skilfully camouflaged snares and booby-traps specially designed to catch the pilot whose vigilance is ever so briefly relaxed. Further problems are introduced by the presence, or absence of, brakes, the general design of the aeroplane, the state of the wind and even the layout of the cockpit. There are probably others that have been overlooked.

From which it is plain that the chief considerations to be observed in taxying are moderate speed and the utmost attention to the state of the track or path ahead. The modern tricycle type can be taxied fast, very fast indeed, as generally a good view is enjoyed and a high degree of manœuvrability is frequently present, but, unless you are moving in a space you actually know to be clear and safe and you have a long run ahead, it is still very unwise to taxi fast. The best car driver does not rely on his brakes for it is a law of nature to find that sooner or later a sticky situation will arise when the brakes will have chosen to fail. The author always quails when watching some smart tricycle layout snaking around a winding and congested perimeter track at 30 m.p.h. plus. So control yourself, always go slowly. Not only slowly, but smoothly. During normal straightforward taxying the machine should move steadily with the engine running at a perfectly constant speed. Those bursts of throttle are the hallmark of the ham-handed one, or the highgrade extrovert.

If it is a tricycle that is being taxied a good view ahead is almost certain—all the more reason for using it to the full. The more usual layout is always more or less purblind on the ground (and not always beyond question in flight) and too much vigilance simply cannot be evoked. Apart from the items of aerodrome equipment generally casually draped around, such as starter batteries, short step-ladders and so on, the ground surface must also be taken into account. Unless you have personal knowledge of the ground condition, make sure first that you are not charging into a morass, or that that long grass does not conceal holes or debris capable of dealing a death wound to tyres or airscrews.

Keep clear of all water and loose mud. Not only does this look unsightly when plastered over the aircraft, but it adds considerable weight and interferes with the flying qualities of the machine.

When working in confined areas, for example among hangars, be very careful of accepting the aid of some enthusiastic soul who, with more good heartedness than ability, will always yearn to give you gratuitous taxying directions—only too often with unfortunate results. Many a good man has run a wing tip along a hangar door or through the rudder of another machine, or torn a wing on a starter battery trolley, in this very way. In other words, develop your own skill—and use it.

Condensing the foregoing we have something like this: taxi at all times at speeds well within the requirements laid down by the prevailing conditions and well within the capabilities of the machine in your charge. If the view ahead is not perfect, it is wise to "weave" constantly so that you may get constant glimpses ahead over both sides of the nose.

Getting Moving

When you are in charge of an aeroplane you may or may not have passengers. If you have then they should be your first consideration. There is much truth in the old saying, which applies equally to the driver of any vehicle, whether it

is a ship or a tram or a passenger aeroplane, that when a good driver is in charge the passengers forget all about the driving and fail to notice that it is done through any human agency. To a considerable extent a driver is good because he is skilful, not only that, he gives the job his whole attention from start to finish. No matter how skilful a driver may be he will still be a bad driver if he overlooks the little things and works with a divided attention.

This applies from the very start, that is when the machine moves from rest to taxi out. This consists of more than just changing the state of the aeroplane from "at rest" to motion. Almost any nincompoop who can wangle himself a licence can achieve *that* much. We all know the type of car driver who nearly dislocates your neck every time he lets in the clutch and throws you forward in your seat every time he touches the brakes. Many pilots, even professional ones, employ the very same slipshod tactics when handling an aeroplane.

It must be admitted that sometimes mechanical faults are the cause of these blemishes, even so, skill should go far towards their elimination. The more care you put into the job the more your passengers will forget your presence. It is rather like the definition of the perfectly dressed man—he is so unobtrusive as to pass unnoticed.

The chief clue to all of these points is the rigid avoidance of any abruptness or roughness. When opening the throttle do so very gradually and steadily. The machine will then take on motion so gently as hardly to be noticeable—unless you have a wheel, or wheels, in a hole. Even then, if you throttle back quickly when out of the obstruction, much of its effect will be cancelled out. The wrong thing to do is to allow speed to gather and then reduce it quickly by the use of brakes.

Straight Taxying

It will already have been gathered that the essentials of taxying along a more or less straight path are moderate speed and a careful watch on the ground ahead. The main complication (with light aircraft chiefly) will be provided by the presence of a wind and will be according to its strength and direction.

The ideal arrangement is when the wind is from dead ahead. All that is then required is a bigger throttle opening to provide a larger tractive effort. With the wind from the rear its effect can vary from a slight inconvenience up to a severe embarrassment, depending upon the machine one is taxying. If the wind is strong it is first essential to keep the stick hard forward in order to keep the tail down. It will also be necessary to brace the rudder-bar firmly—in most cases—to prevent the rudder from kicking from side to side. Some machines, when moving before a strong wind, become very difficult to control directionally and rough treatment is the only solution, but the speed must be kept very slow as, should the machine weathercock with too much way on, you will be nicely placed for sticking a wing-tip into the ground and possibly turning completely over. This does not apply, at any rate quite so strongly, to heavier types, but with a Tiger Moth it will be a very severe risk.

In a pronounced cross wind it will be wise to have a couple of helpers on your wing tips if you are in a light machine sans brakes. If it is heavier and has brakes the state of affairs will be altogether happier, but plenty of care will still be called for. Now everything depends upon your brakes, as to keep straight the down-wind brake will be doing heavy duty and the throttle will be opened more to provide slipstream across the vertical tail surfaces. Here again a little human aid will not be *infra dig* and will save a lot of wear on the long suffering brakes. It is also beneficial to keep the stick over towards the upwind side in order to keep that wing from lifting.

Turning

Turning a machine on the ground depends in the first case whether it is in motion or stationary; whether or no it has brakes, how many engines and the amount and direction—relative to the machine—of the wind.

With the simple, brakeless light plane, like the Tiger Moth, turning in confined spaces should be done with assistance on the wing-tips. In the open, although a steering tail-skid does assist, most of the work is done with engine and rudder (this lack of slipstream is a very noticeable feature in the first moments with jet aeroplanes). With brakes the matter is very much simpler, likewise with multi-engined machines. Twins are manœuvred by the motors, four engined types by the two "outers."

The three most important points to watch are (a) take careful stock of your surroundings and other traffic, especially behind you, before you turn; (b) if you are turning a light aeroplane in a small radius and a strong wind, take especial care when the wind is either cross or astern; (c) the prevalent habit of screwing round a machine fitted with brakes, using one wheel as a pivot, is much to be deplored. This is very bad for the undercarriage leg and the tyre. Many tyre failures have been traced back to this practice.

In machines which have the ordinary "square" type of aileron control—that is, not differential, as in the Moth types—some assistance in turning on the ground can be gained by "crossing" the controls, i.e., putting on right bank with left rudder and vice versa. As, at low speeds, the ailerons work in reverse effect from normal flying speeds, the turning effect created by their operation is of some assistance when turning.

Stopping

Odd as it may seem it is possible to stop an aeroplane in one of two ways. One of them right, the other wrong. The common preference is for the wrong one, the reason being that it is easier, also the prevalent notion that passengers do not matter.

Here again, reducing the thing to its simplest form, stopping a moving aeroplane consists merely of changing its state of motion to one of rest. But what matters is the period in between. We are all familiar with the bad car driver who threatens to ram your head through the windscreen every time he decelerates and the same method is all too often the stock-in-trade of the modern 'bus driver. In his case the maintenance people are sometimes to blame, but sometimes it is the result of careless driving.

In the first case your vehicle should never be moving a fraction faster than is either safe or convenient for the prevailing conditions. If an impending stop is in view the speed should be properly reduced well in advance and deceleration should be commenced very early so that there will be steady but almost imperceptible loss of speed until the vehicle has come to rest. The passenger should be scarcely aware that the machine is decelerating at all, only finding that he is, almost without realising the process, at a standstill. The way to achieve this is, then, to firstly keep the speed moderate, to commence deceleration early, to apply brake gently but steadily until the machine is almost at rest, then to release it at the very last moment as the machine comes to a stop, only applying it fully when all movement has died. In this way that irritating little last minute jerk can be entirely eliminated. It will require considerable practice to get it exactly right, but this little touch will add much polish to your technique. The difficulty at first is to avoid releasing the brakes too early.

In short, just as your instructor will tell you to *fly* the machine and not let it fly you, *taxi* it and do not let it taxi you.

IMPORTANT ANNOUNCEMENT

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The April issue of the *Light Plane* will once again be a specially enlarged "Start of the Season" number, containing details and tabulated lists of all branches of British private flying.

Features will include:

1. **Airports of the British Isles.**
2. **Complete list of every U.K. Club.**
3. **Complete list of Maintenance and Servicing Facilities.**
4. **Map of U.K. Airports.**
5. **Telecommunications Guide.**
6. **A Buyers' Guide to Aircraft on the Market.**

THE DEMAND WILL BE GREAT—ORDER YOUR COPY NOW

Spotter's Digest

Naturally the first and foremost interest of our readers rests in the light plane and flying club movement, but how can one be enthusiastic in these spheres and remain in complete oblivion as to the events in global aviation? The *Light Plane*, in introducing this new feature, intends to devote these pages to descriptions of new aircraft of all sizes and in presenting "snippets" of information covering world aviation. Needless to say, suggestions as to how we may improve these pages to suit YOUR tastes will be welcomed.

A Miles Messenger, G-2-1, made available to Blackburn's by the Air Ministry, is now flying with a 180 h.p. Blackburn Bombardier installation.

De Havilland Australia's G-2 glider has been modified to flight test the tadpole-section "Griffiths" wing.

F. G. Miles has bought the Continental Gemini G-AGUS, whilst Mr. G. H. Miles has purchased the Praga-engined Messenger G-AILI.

150 SECAN SUC Courlis have now been completed and production has terminated.

The Breguet 11 E, three-seat helicopter, made its first flight at Villacoublay on December 1st.

The second example of the Prestwick Pioneer will soon be flying, whilst the third and fourth examples are progressing rapidly.

The Handley Page Manx, experimental two-seat swept-wing and tailless research monoplane, powered by two 140 h.p. Gipsy Majors, now lies discarded in a hangar at Radlett; the Miles M.39b tandem wing Libellula met its fate in late 1947 in the hands of two men and a saw!

Primer G-ALBL was recently undergoing modifications to the fuselage top, which would result in improved airflow and better all-round vision; it would give the impression of a raised cockpit.

290 personal planes were delivered from U.S. factories during November, as against 465 in October; 102 were two-seaters, and 188 were four-seaters.

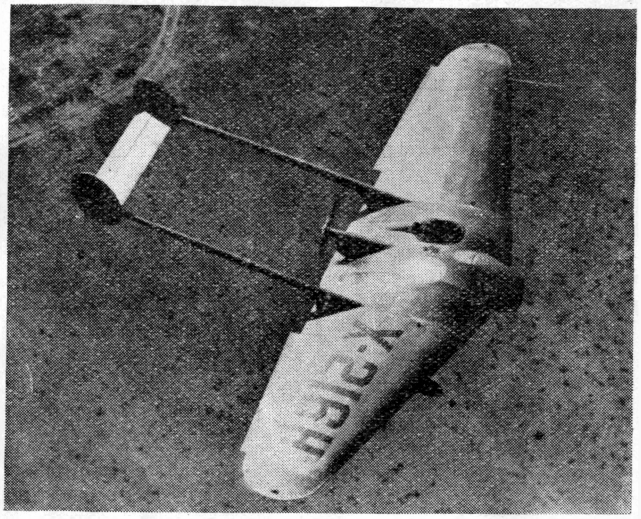
Service de l'Aviation Legere et Sportive has ordered 100 NC 853 and 100 SIPA S. 901 two-seat light planes.

Italian Ministry of Defence will shortly order small numbers of the SAI 1001 "Grifo" and the SAI 7 liaison aircraft.

Fokkers will only produce 20 Promotors, as factory space is needed for important government work; several Promotors are being sold to Spain.

The Argentine Government recently ordered 100 Nord Norecrins, and negotiations are proceeding with the Brazilian authorities for purchase of a similar number of the same type.

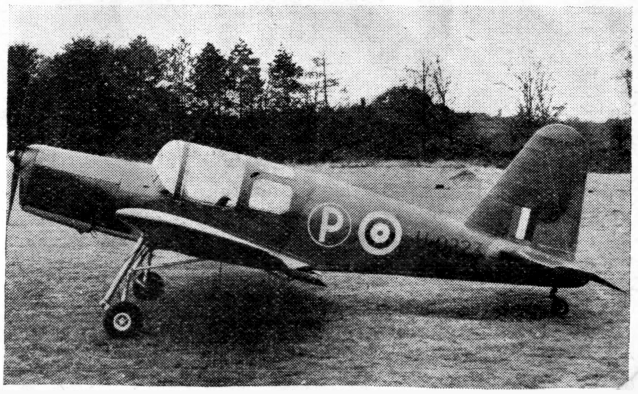
Chrislea's reported the following Super Ace deliveries by 5/1/49: G-AKUV to Mrs. Morrow Tait, G-AKUW to Mr. Fox of Fairoaks, G-AKVA to Sir Giles Guthrie, VH-BRO to Australia, ZK-ASI, J, H to New Zealand, VP-YGI to Kenya, VP-YGM to S. Rhodesia, and G-AKUY and Z to Argentina.



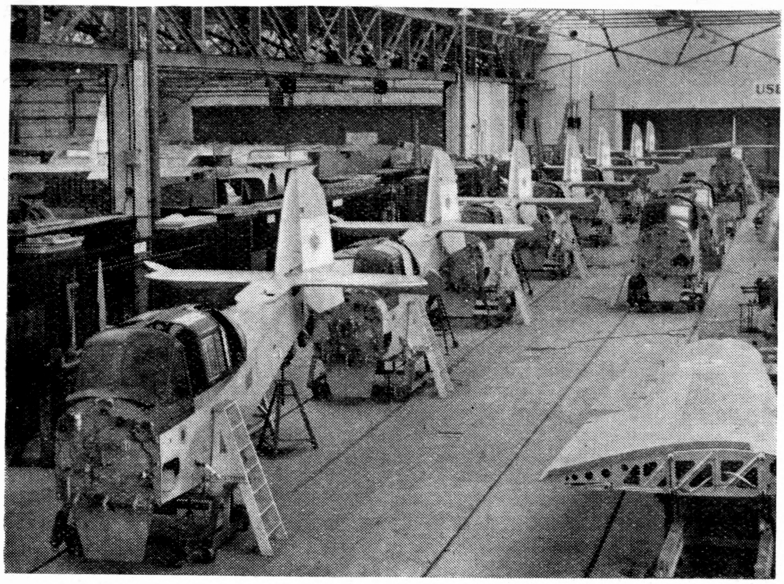
When thinking of the fabulous Northrop B-35 Flying Wing bomber it is interesting to reminisce that the pioneer development work on this project was commenced 20 years ago with a light plane. The first Northrop Flying Wing, with a wing span of 30 feet 6 inches, is shown here in its maiden flight. This aircraft, built in 1929, was successfully flown many times and afforded invaluable research information. While this was not a true "Flying Wing," it represented a monumental step on the way towards to-day's big Northrop Flying Wing B-35 bomber, built at Northrop Field, Hawthorne, California.

Light Plane photo

The first four-place Cessna 170 to enter the Union of South Africa recently arrived at Ladysmith. Registered ZS-BZB, the machine is seen here being admired on Ladysmith Airport.



Published for the first time anywhere is this exclusive photograph of the prototype Miles Messenger with single fin and rudder. The Messenger was fitted with one, two and three fins and rudders before it was decided to standardise on the triple configuration. It is of interest to note that the fuselage of the prototype Messenger also served as the fuselage of the prototype Miles M. 28. The aircraft illustrated U-0223 was later written off in a crash. Note the exposed tailplane tips where the outer fins have been removed, and also the bracing wires from fin to tailplane.



Percival Prentices on the production line at Luton Airport. The Prentices shown are part of an order for 130 for the Argentine Air Force. In the background a Prince can be seen in the final stage of assembly.

D.H. NEWS

Five D.H. C.1 Chipmunk trainers are now in the production stage at the D.H. Broughton factory. These five Chipmunks will be the first of the type to be produced in Britain, although quantity production at Broughton is scheduled as soon as the Air Ministry confirms its decision to order the Chipmunk for the R.A.F.V.R.

Other D.H. news is that to date over 220 Doves and 19 Devons have made their first flight from Hatfield, and that a demonstration model of the Drover is expected at Hatfield this spring. Two British charter companies have already ordered Drovers.

ERCOUPE PROGRESS

Fred Weick, designer of the Ercoupe and now doing personal-plane research at Texas Engineering and Manufacturing Corporation, is reported to be working on even simpler controls for the Ercoupe design. Meanwhile, the four-place Ercoupe 4 and the twin-engined five-place dual controlled pusher Ercoach are both reported to be in storage at the Erco factory, further development having been temporarily shelved. Neither is likely to be produced in the foreseeable future.

STALLS AND SPINS

Reports from the Aircraft Owners and Pilots Association show that 902 aircraft were destroyed in 1947 in accidents attributed to stalls and spins. 372 other planes were substantially damaged. Fatalities numbered 622.

FLYING OUR ANCESTORS

Recently 300 monkeys arrived in London by B.O.A.C. freighter from Calcutta. They were transhipped to another aircraft in London and arrived in New York a day later. They are the first consignment of 6,600 monkeys which are to fly from India, via London, to the U.S.A. this year.

FAIREY NEWS

Prime news from Hamble is of the Primer, one of which is undergoing modification to latest R.A.F. standards. Modifications include a raised cockpit canopy à la Chipmunk and a cut-away rear fuselage. It is also understood that spats will be done away with on all production models. The two Juniors, OO-ULA and OO-TIT, have now returned to Belgium and will not be back for some months.

NEW AIRPORT FOR PORTSMOUTH

At a recent meeting of Portsmouth (Hants) Education Committee, it was announced that the City Council are planning a new Municipal Airport to be built on Farlington Marshes just north of the city. The City Council consider that the present airport is too small for modern aircraft, and the new site offers many advantages in the way of larger runways and unrestricted approaches. The City Docks and Airports Committee consider that it would take only one year to drain and fill the new site and bring it into use as an airport. The present City Airport came into use about 1930 and is the site of the large Airspeed factory. It is regularly used by aircraft up to Dakota size, and many thousands of Airspeed Oxfords have been flight-tested from it. The new airport sight is adjacent to Langstone Harbour, which came into prominence recently as a proposed flying-boat base.

EDINBURGH (TURNHOUSE) AIRPORT

The Ministry of Civil Aviation have reached agreement with the British European Airways Corporation on the technical measures necessary to ensure regularity of air services all the year round into Turnhouse Airport. These measures include certain navigational aids, some of which are already installed, and the rest will be ready before the normal re-opening of the Turnhouse services this spring. As an extra precaution, a length of ground at the south-east end of the main instrument runway will be consolidated so as to obviate any possible danger of an aircraft overrunning in bad weather.

BRITISH TRAINER ADOPTED BY ARGENTINE AIR FORCE

A contract worth nearly £1,000,000 for 130 Percival Prentices has recently been signed in Buenos Aires between the Argentine Government and Percival Aircraft, Limited. The Argentine Government has also acquired the licence to manufacture these trainers in its own country in addition to the aircraft being delivered to them off the Luton production lines. It is believed to be the largest number of aircraft ordered on one contract from this country by the Argentine.

As a result, the Prentice is being introduced as the standard basic trainer for the Argentine Air Force, which is the third country to select this aircraft for these duties, the others being Britain (for the Royal Air Force), where the Prentice is now in squadron service, and India.

A start was made last year with the building under licence of fifty Prentice aircraft for the Royal Indian Air Force at the Bangalore factory of the Hindustan Aircraft Company. To meet initial training requirements, however, a number of Prentices have been constructed at Luton, the first of which have been flown out to Ambala, India, a delivery flight of some 6,500 miles.

AIR TOURING

U.K. Telecommunications.

Bristol (Filton) Airport. Full telecommunication facilities are now available at Filton Airport. The following frequencies are in use: R/T. **Airfield Control,** H.F. 3,255 kc/s., V.H.F. 118.1 mc/s., 120.7 mc/s. R/T. **Approved Control,** V.H.F. 119.1 mc/s., and V.H.F. O/F. facilities frequencies of 118.1, 119.1, 120.7 mc/s.

Jets for Light Aircraft

by "KESTREL"

SINCE the earliest days of private and club flying, the crux of light plane design problems has been the engine, which ultimately determines the cost, performance and contours of the light aeroplane. From time to time, since the end of the war, mention has been made of the possible adaptation of jet propulsion as the prime motivating power of *to-morrow's* light plane. These reports have given rise to much speculation and no doubt some enthusiasts are already imagining themselves *shooting up* the clubhouse at 600 m.p.h. However, such ideas are probably destined to remain just roseate pipe dreams for many years to come, but we consider the subject to be of sufficient interest to devote these pages to a review of current projects and developments in what may prove to be the "new look" in light plane design.

War was largely responsible for the rapid development of jet propulsion as a means of motivating aircraft and it was in the sphere of military aviation that the new source of power was first brought to a state of efficiency. With the coming of peace, steps were taken to confer the benefits of jet propulsion upon civil aviation, but the major obstacle in the path of its successful application to private owner and club aircraft is the substantially higher fuel consumption as compared with the orthodox piston engine.

Nearly a year ago, the American National Advisory Committee for Aeronautics conducted a fundamental investigation to determine how the main types of jet propulsion unit—the pulsating athodyd, the turbo-jet, the jet-operated propeller and the airscrew-turbine—compared with the conventional piston engine. These tests yielded some interesting results, but it should be borne in mind that no research on comparative costs or noise and safety factors was undertaken, only fuel consumption and thrust/weight ratios being considered.

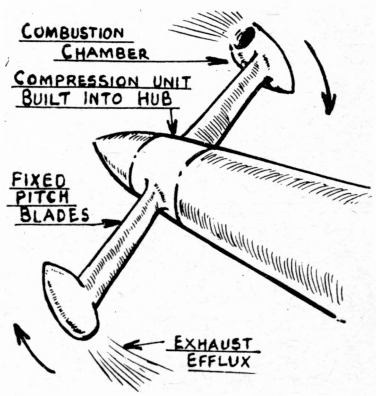
The jet units were examined with their application to a light plane weighing 1,200 lb., and with a maximum cruising speed of 100 m.p.h. It was found that the highest fuel consumption of the various types of jet unit considered was that of the pulsating athodyd, which proved to be 12 lb. per horsepower hour, which compares very badly with the average of 0.7 lb. per horsepower hour of the conventional piston engine. The nearest approach in fuel consumption to the type of engine now in use was made by the airscrew-turbine, which consumed 1.3 lb. per horsepower hour. Thus, it can be ascertained that fuel consumption is discouraging and, at first glance, the jet unit would appear to offer little competition in the light plane engine field. However, in the weight/thrust ratio, jet propulsion affords a far better showing and in this regard the jet airscrew is the favourite with the airscrew-turbine taking second place, and even the pulsating athodyd making close rivals for the piston engine. If we compare the jets in terms of engine weights plus fuel consumption over, say, a 300-mile range, more optimistic comparisons are revealed, with the airscrew-turbine and jet-airscrew coming close enough to the normal piston engine to give some food for thought. Again, it should be borne in mind that while the cheapness of kerosene somewhat offsets the cost of higher fuel consumption, the only offset to the weight of the extra fuel is the lightness of the jet unit itself. On flights of more than three hours' duration, the extra fuel that would have to be carried would eliminate the saving in weight given by the jet unit.

Light Jet Units at present under Development

The only light airscrew-turbine yet developed to any extent is the Boeing Model 502, which weighs merely 140 lb. and delivers some 200 shaft horsepower. The advantages claimed for the light airscrew-turbine or, for that matter, the gas turbine generally, are that the turbine affords a smoothness of operation that cannot be obtained by the conventional piston engine—the force of the gas turbine being steady whereas, the piston engine develops cyclical forces, with the pistons constantly pounding in and out of the cylinders. Precision in balancing the turbine shaft leaves the unit free of vibration, even though it may be running at extreme velocities. Another advantage of the airscrew-turbine is the simpler construction than the piston engine. No intake or exhaust valves, pistons or cooling system are required, the only ignition needed is a spark gap in each of the combustion chambers, and the spark is only used in starting the engine. The main shaft necessitates only two bearings, although the tolerances are very close, being about 2/10,000 of an inch. There is no carburetter, and the only control over speed is the fuel injector shut-off.

The Boeing 502 airscrew-turbine operates on essentially the same principles as the constant pressure gas turbines used by high-speed warplanes. Basically, it is a jet unit whose power is utilised to drive a turbine wheel on a shaft to which is attached the propeller. Simply, air is drawn into the unit, is compressed in the compressor, enters the combustion chambers where fuel is added, and ignited. The burning gases expand and force themselves through nozzles, motivating the turbine—which is mounted on the same shaft as the compressor. Whereas in the straightforward gas turbine all remaining power is used to provide jet thrust, in the airscrew-turbine, the power shaft is hooked up to the propeller, and the available force is used to drive this instead of providing jet thrust.

The Boeing 502 airscrew-turbine is a modification of the Boeing 500, a smal turbo-jet unit weighing 85 lb. and developing 150 lb. thrust. Although an efficient engine from the basis of thrust per pound of engine weight, the Boeing 500 is not efficient when operating at speeds normally associated with light aircraft—the horsepower developed being in direct proportion to the aircraft's speed, i.e., at 150 m.p.h., the unit develops only 60 h.p., but at 375 m.p.h., the same unit would develop 150 h.p. Therefore, owing to the high speeds necessary for the efficient operation of the turbo-jet, it is envisaged primarily as the motivating power for short-range guided missiles rather than light aircraft. In contrast, the aforementioned airscrew-turbine is considerably more practical and its maximum efficiency can be delivered at speeds suitable for light planes. Thus, the Boeing 502 would appear eminently suitable for a three/four seat private owner type of aircraft, although no production plans have yet been announced.



The jet-operated propeller as developed by the American N.A.C.A.

The jet-operated propeller offers as many possibilities as the airscrew-turbine as it is equally simple to produce. A jet-operated propeller—a compressor unit built into the airscrew hub, fixed-pitch blades, and combustion chambers with exhaust effluxes positioned at the blade tips—has been built for testing by the N.A.C.A., and although not installed in an aircraft, the propeller has undergone extensive rotational tests and the results have proved this form of power plant both practicable and suitable for further development.

Another American company interested in the jet/light plane combination is the West Engineering Company, of Los Angeles, which has developed both a power unit and an airframe. The company was formed by Mr. Edward West, who developed his jet unit in a rather unorthodox manner. He commenced his deveolpment work by purchasing 6,000 new superchargers for piston engines from war surplus stocks, with the idea of converting them into small turbines. The conversion of the supercharger into a turbo-jet unit has met with considerable

success although the present test unit, which weighs 180 lb., develops only 280 lb. thrust at 26,000 r.p.m. whereas the designer requires 400 lb. thrust from the unit for his projected high-speed personal plane.

The West Engineering unit is of single-stage radial compressor type, the basis of which is the supercharger. Added to the supercharger are: a combustion chamber—in which reversal of flow occurs—an injector nozzle and an exhaust duct. The original turbine blades of the supercharger have been replaced and the compressor blades will also be changed, the new blades having increased depth and superior aerodynamic form. The potentialities of the unit can be gauged from the fact that the U.S. Navy has placed a contract for a small number of experimental examples to power high-speed guided missiles.

An extremely promising unit is the explosion-type gas turbine designed by Mr. E. A. Maynor, which weighs 82 lb., and has operated for long periods at 65 and 100 h.p., and has on occasions attained 162 h.p. The Maynor turbine—which is cylindrical in shape, is 15 inches in diameter and 17 inches in length—has six combustion chambers which fire successively. A small blower compresses the air into the combustion chamber and the firing of each combustion chamber is synchronised by an electrically-driven device which times the injections of fuel. The combustion chambers are fired in rotation and on each cycle the chambers open to permit the gases to expand through an impulse wheel which produces the power. Simultaneously, the combustion chambers are recharged with air, enabling the firing cycle to continue without interruption. On the Maynor turbine's best test run it produced 104 h.p. on 53.35 lb. of kerosene—an efficiency of approximately .51 lbs. of fuel per horsepower hour, an appreciably lower consumption than a normal piston engine.

Mr. Maynor claims his turbine to offer extreme accessibility for servicing and maintenance (it can be dismantled and completely reassembled in an hour); simplicity of construction with resultant low production costs; simplicity of operation; the advantage of running on low grade oil fuel or kerosene; and an extremely low weight—a quarter of that of a contemporary piston engine.

Great Britain is not disinterested in the possibilities of the light jet unit and a few such engines are under development, i.e., the Power Jets airscrew-turbine of 250 b.h.p., and the de Havilland airscrew-turbine of 450 b.h.p. In addition, some publicity has been given to the Centrax road transport turbine of 160 h.p. which was shown at the British Industries Fair. However, this turbine is still in the early experimental stage—as are the other British light jet units—and has not (at the time of writing) commenced bench running. Thus, it is unlikely that a similar engine will be available for light aircraft for some time to come.

A Design for a Light Jet Plane

The American West Engineering Company, whose gas turbine has already been mentioned, has designed a four-seat high-speed personal plane destined to be powered by two 400 lb. thrust gas turbines. This project is a cantilever all-metal mid-wing monoplane with a retractable tricycle undercarriage and intake and exhaust ducts positioned beneath the fuselage. Both turbines will only be used for take-off and climb, one being cut out when a cruising altitude is attained.

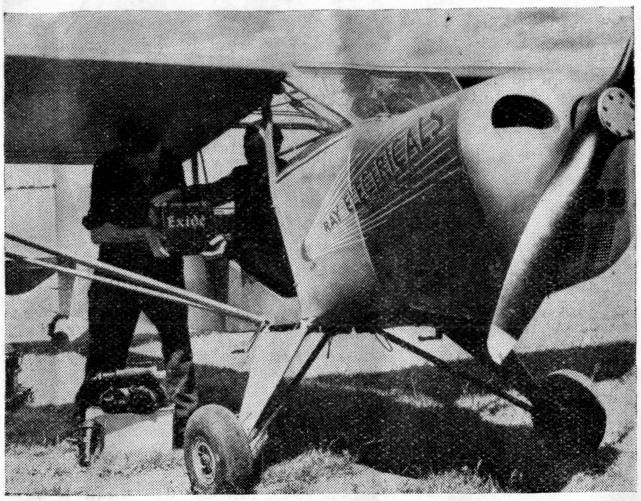
The gross weight at take-off—with full tanks—is estimated at 5,000 lb., which seems considerable. However, when one considers that each turbine will require approximately 520 lbs. (760 U.S. gal.) of fuel for one hour at maximum thrust—1.3 lb. fuel per lb. of thrust per hour is claimed—this take-off weight seems justified.

Therefore, if you require a private plane that will touch 350 m.p.h. on both turbines, or cruise at 200 m.p.h. on one turbine, this project—if it materialises—should fulfil your requirements. Personally, we are happy to tootle along in an Auster, content in the knowledge that we are getting somewhere, or are we just old fashioned?

Registration Notes

Additions to the Register, period ending 10/2/49:

Registration	Type	Engines	C. of A. Expires	Owner
G-AICS	Bristol 170 Freighter XXI ...	2 Bristol Hercules 672 or 673	11.1.50	Airwork, Ltd., London.
G-AIFY	Bristol 170 Freighter XXI ...	2 Bristol Hercules 672 or 673	16.1.50	Ministry of Civil Aviation, London.
G-AITN	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	9.1.50	Derby Aero Club, Burnaston, Derby.
G-AITT	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	21.12.49	Anna Valley Motors (Salisbury) Ltd., Salisbury.
G-AITX	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	3.1.50	Anna Valley Motors (Salisbury) Ltd., Salisbury.
G-AIUH	Airspeed AS.40 Oxford I ...	2 Armstrong-Siddeley Cheetah X	5.1.50	Reid & Sigrist, Ltd., Desford.
G-AJML	Percival Proctor IV ...	D.H. Gipsy Queen II ...	2.1.50	Field Aircraft Services, Ltd., Croydon.
G-AKBK	Handley-Page HP.70 Halifax C.VIII	4 Bristol Hercules 100 ...	10.1.50	Lancashire Aircraft Corporation, Samlesbury, Lancs.
G-AKCB	Avro 689 Tudor V	4 Rolls-Royce Merlin 621	30.12.49	British South American Airways Corporation.
G-AKCZ	Beechcraft C.18S	2 Pratt & Whitney Wasp Junior	10.1.50	Bell Construction, Ltd., London.
G-AKVB	Chrislea CH.3 Ace II ...	D.H. Gipsy Major 10 ...	3.1.50	Chrislea Aircraft Co., Ltd., Exeter Airport.
G-AKXM	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	16.1.50	Surrey Financial Trust, Ltd., Coulsdon, Surrey.
G-AKXN	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	20.1.50	R. A. Short, Thornton Heath, Surrey.
G-AKXT	Handley-Page HP.70 Halifax C.VIII	4 Bristol Hercules 100 ...	28.12.49	Lancashire Aircraft Corporation, Samlesbury, Lancs.
G-AKZG	Percival Proctor III ...	D.H. Gipsy Queen II ...	28.12.49	M. Dumont, Stockton-on-Tees.
G-AKZX	Miles M.38 Messenger IVA	D.H. Gipsy Major Id ...	30.12.49	N. M. Browning, Ongar, Essex.
G-ALFE	Miles M.14A Hawk Trainer III	D.H. Gipsy Major I ...	4.1.50	H. J. C. Turner, Lewisham, S.E.13.
G-ALFO	Douglas C.47 Mk. III ...	2 Pratt & Whitney Twin Wasp	30.12.49	The Zinc Corporation, Ltd., London.



Speedy service—Mr. L. Ingleton, Delivery Pilot of Ray Electricals, Ltd., delivers a new battery for a stranded aircraft. Another satisfied cusomer, thanks to a personal plane.

In Brief . .

A LONGER RUN FOR THE GIPSY

The overhaul period for the Gipsy Queen Series 70 motor has now been extended to 500 hours—an increase of 100 hours running between overhauls. This fact will mean a major saving (financial) to all Dove operators.

ROTATING AROUND DE HAVILLAND'S

News from Canada is that the de Havilland Aircraft Company of Canada is now undertaking sales and service of Bell Helicopters in Canada, Newfoundland and Labrador.

THE A.B.A.C. BALL

An announcement from the Council of the Association of British Aero Clubs and Centres states that they have been most regretfully compelled to cancel the third Annual Flying Clubs' Ball, which had been announced to take place at the Dorchester Hotel on Friday, March 11th, 1949. This is all the more to be deplored as at the first Ball in 1947 it was found impossible to accommodate all those who applied for tickets.

The Council draws attention to the general drop in attendance at other such functions, and connects this phenomenon with the financial stringency now affecting most club members.

It is hoped, therefore, that the Ball may be held next year. In the meantime a summer conversazione will be substituted instead, to take place at Fairoaks Airfield on Saturday, September 3rd, 1949. The prize distribution in connection with the Fighting Fund appeal will be linked with this event instead of, as formerly, the Ball.

GOAT HONEYMOONS BY AUSTER

The first aerial transport of a nanny-goat occurred recently in romantic circumstances.

Mr. R. V. D. Phillips, of Binstead, Isle of Wight, the owner of pedigree Richmond Nancy, unable to find a suitably aristocratic mate on the island, arranged a meeting with a billy on the mainland. Richmond Nancy was flown to Southampton Airport to rendezvous with the billy in an aircraft hangar. After her brief honeymoon, she was flown back to Cowes. Mr. Richard Turlington, who flew the goat, mentioned that she was a perfect passenger, unexcited, uninquisitive and untalkative; she stood behind him, watching with quiet eyes the landscape below. On her return her expression was wistful but controlled, and she stepped daintily from the Auster with the nonchalance of a veteran flyer.

SERVICE ON THE SPOT

The first air electrical repair service in this country is now in operation. It has been started by the Exide agent at Folkestone, Mr. P. L. Chadwick, proprietor of Ray Electricals, Ltd.

Mr. Chadwick, a 37-year-old Kentish man, married, with four children, is an electrical engineer. He started up at Folkestone in the electrical engineering business in 1941. Following authorisation to carry out electrical work to aircraft on Lympne Airport, Mr. Chadwick realised the necessity for saving travelling time when undertaking repairs to electrical installations in aircraft or airports. So last year he started an aerial service with an ex-Army Auster spotting plane, which takes him to the job or collects electrical and aircraft components. The plane is piloted by an ex-R.A.F. pilot, Mr. L. Ingleton.

He has already received orders which have taken him to Southend, Croydon, Gravesend, Redhill, Fairoaks, Reading, Shoreham, Portsmouth, Thruxton, White Waltham, Denham, Radlett, Broxbourne, Rochester and other airports. Mr. Chadwick has a regular schedule of flights to these aerodromes to collect repair jobs and fly them back to Lympne, where they can be picked up by his works van and taken on to his Folkestone workshops.

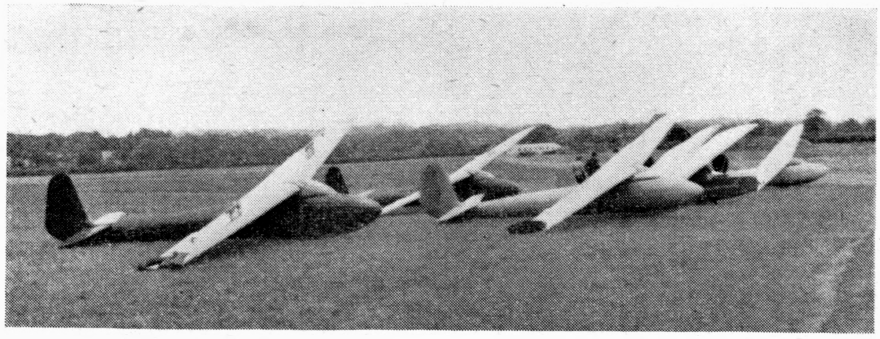
But Mr. Chadwick will not be satisfied just by servicing planes in this country. He has his eye on the Channel Islands, and especially on the Continent, where he thinks his service would be a boon to the many aircraft operators and others who require a quick electrical repair service.

The cost of this Air Service is no more than for a road service. Mr. Chadwick pointed out that the cost of the Auster was less than the purchase price of some motor vans. "It does 23 miles to the gallon at a cruising speed of 75 m.p.h., so that it is cheaper to run than many motor-cars," he said.

Photograph by E. J. Riding

Top: Making a Start. The first ultra-light aircraft to be built since the war taking to the air for the first time at Elstree on January 9th. The machine, a Heath Parasol, is registered G-AFZE and has been built by Mr. R. Parker. Powered by a Blackburn Tomtit, two-cylinder motor of 25 h.p., G-AFZE is the machine which was on view at the W.J.A.C. Rally at Hendon Airport in June of last year. The only other Heath Parasol known to be in the country is at Christchurch Airport, Bournemouth, and should fly this year. For its first flight, pictured here, the Parasol was flown by Mr. C. H. Debenham and completed two low circuits—at times below the level of the boundary hedges. Mr. Debenham reported that the aircraft flew well and was reasonably light on the controls; however, it has been decided to fit an airscrew with a coarser pitch, and it is expected that the performance will be improved when this modification has been completed.

Bottom: U.L.A.A. Elstree Branch's first "private Owner"— Mr. R. Parker (*left*) and sister, with Messrs. Armstrong and Debenham (*pilot*). Machine is the Heath Parasol.



The Surrey Gliding Club

THE Surrey Gliding Club operates from Redhill Aerodrome in close co-operation with the Imperial College Gliding Club. Training is in the capable hands of the Chief Instructor, Mr. Lorne Welch.

The club operates a Weihe, several Olympias, a Tutor and a Cadet, and has also the use of a Cirrus Auster II, which has probably logged more aero-towing hours than any other light aeroplane in the country.

The club's latest acquisition is a winch. This is driven by a Ford V8 engine and is mounted on a two-wheeled trailer chassis. Launches up to fifteen hundred feet have recently been made by this winch, and it is becoming increasingly popular with the soaring pilots who compare its cost of half-a-crown a launch with the twelve shillings and sixpence charged for an aero-tow up to two thousand feet, but of course the aero-towee still has a greater chance of connecting with cloud lift.

The club claims more than a hundred flying members, including several private owners, two "Gold C's," a dozen "Silver C's," and a further half-dozen who have only one "leg" of their Silver C's to complete. The club tries to encourage high performance flying, and has a rule that no sailplane may be taken from the hangar without a barograph installed and running. Another rule with the same end in view is that a pilot in a sailplane has the absolute right to make the very best use he can of the conditions he finds, regardless of who may be waiting for the next turn or of how difficult the retrieve may be.

The majority of the club's flying is in pure thermal upcurrents caught in the vicinity of the aerodrome from aero-tows or winch launches, but sometimes members will fly across Redhill to the slope at Buckland which the club used before the war, put in an hour of quiet hill-soaring there, and then try to return six miles upwind to the aerodrome, which they often reach.

The club offers instruction in all stages of the art of gliding and soaring. *Ab initio* members get their elementary training on the Cadet and the Tutor, and the Olympias are used for all soaring. The Weihe is used by a handful of the more advanced members. Entrance fee is three guineas, annual subscription for flying members is six guineas. The flying fees are: On trainers—elementary instruction up to four flights, five shillings; extra flights, one and threepence each; circuits, two shillings each. On sailplanes—Olympias, ten and sixpence per hour, with minimum charge three shillings including winch; Weihe, fifteen shillings per hour, with minimum three and sixpence. Launching charges for private owners, two and sixpence per winch launch. Aero-tows to two thousand feet, twelve and sixpence; above two thousand feet, a shilling per minute.

Flying normally takes place every week-end, but mid-week flying can also be arranged by appointment with the resident instructor. Ground facilities include a clubhouse with bunks, kitchen, bar, table tennis, darts, and a piano. The members have also brought out a Year Book, priced at five shillings, which describes in full the club's activities, and contains many articles and photographs of interest.

One gains the impression at Redhill that here is a club whose members have the will, the energy and the ability to overcome all setbacks and lack of official support. While such clubs exist, we shall be assured of a constant stream of enthusiasts ready by their deeds to increase the airmindedness of the nation, and to win for her a leading place in the international air.

J.C.N.

MEMORIES OF A GREAT PIONEER

(*continued from page* 17)

this machine, by a flight of 186 miles in 4 hours 47 minutes. Two years later it was fitted with a 120 h.p. Austro-Daimler engine and carried five people at 70 miles per hour.

He next built No. 3 which was a smaller edition of No. 2, with the same type of motor. With this he flew round England in the *Daily Mail* race in 1911, being the only biplane and the only British machine to finish, coming in fourth.

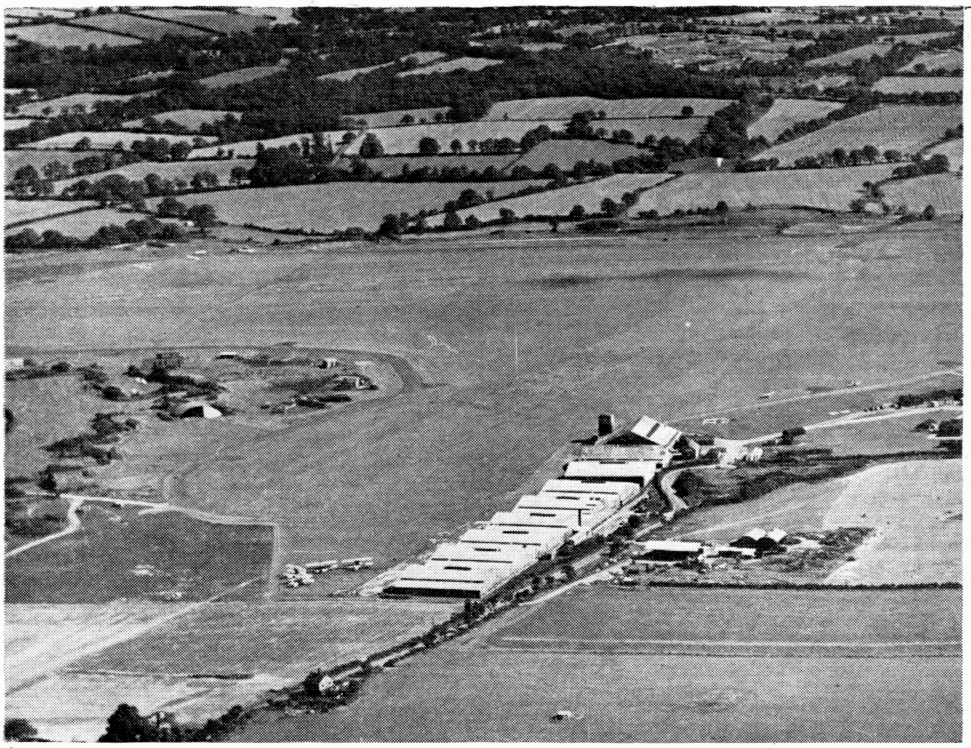
He won the two Michelin Cups at the end of the year, one for a cross-country flight, and the other for a "closed circuit." He next built a monoplane powered with a 120 h.p. Austro-Daimler engine for the military trials in 1912, but the machine came to an untimely end three weeks before the trials, through running into a herd of cows in a forced landing.

With the help of his family, mechanics, and a few faithful friends, Cody succeeded in re-building the "Circuit of Britain" machine, which he fitted with the engine from the monoplane. All the world knows how he beat the best British and foreign manufacturers, backed with unlimited financial resources, and competing against machines flown by the world's finest pilots, thus fittingly proving to the War Office that his was the best machine of them all, in which must have been "his finest hour." The Government ordered only one machine from him. It is now in the Science Museum at South Kensington.

Cody started a Flying School at Laffans Plain and his first pupil was Captain Duncan Davis, the founder of Brooklands Aero Club and Brooklands Aviation, Limited, who control the Northamptonshire and the South Coast Flying Clubs. Other pupils included H. D. Harvey-Kelly, the famous Commander of the Anti-Richtofen Circus, and J. N. Fletcher, who was also a well known Airship Pilot. Owing to one machine only being available, Col. Fletcher was the only person to take a Pilot's licence on the Cody machine.

Cody was killed in August, 1913, in a large seaplane built for the Waterplane Circuit of Britain, organised by the *Daily Mail*. The machine was fitted with wheels for land flying at the time of the crash. Killed with him was W. H. B. Evans, the Hampshire County Cricket Captain.

The soldiers gave him a truly royal funeral in the Military Cemetery at Aldershot, every unit of the Army being represented, and the whole of the Royal Flying Corps, including the Naval Wing, attended to a man.



Previous Airfields in this Series:

1. Elstree.
2. White Waltham.
3. Fairoaks.
4. Hooton Park.
5. Broom Hall.
6. Skegness.
7. Speeton.
8. Newtownards.
9. Perth.
10. Portsmouth.
11. Shoreham.
12. Luton.

CIVIL AIRPORTS—No. 13.

REDHILL AIRFIELD,
SURREY.

Secretary: A. S. Burridge.

Telephone No.: Nutfield Ridge 2245.

Position: 51° 12′ N., 00° 10′ W. 2½ miles S.E. of Redhill.

Field Elevation: 210 ft.

Obstructions: Nil.

Airfield Lighting: Emergency flare-path only.

Transport Facilities: Nutfield Station half a mile from airfield.

Hangarage: Nine full-sized hangars.

Servicing: Major facilities available.

Fuel: 73, 91 and 98 octane.

Overnight Accommodation: Full accommodation and catering facilities at Redhill Flying Club.

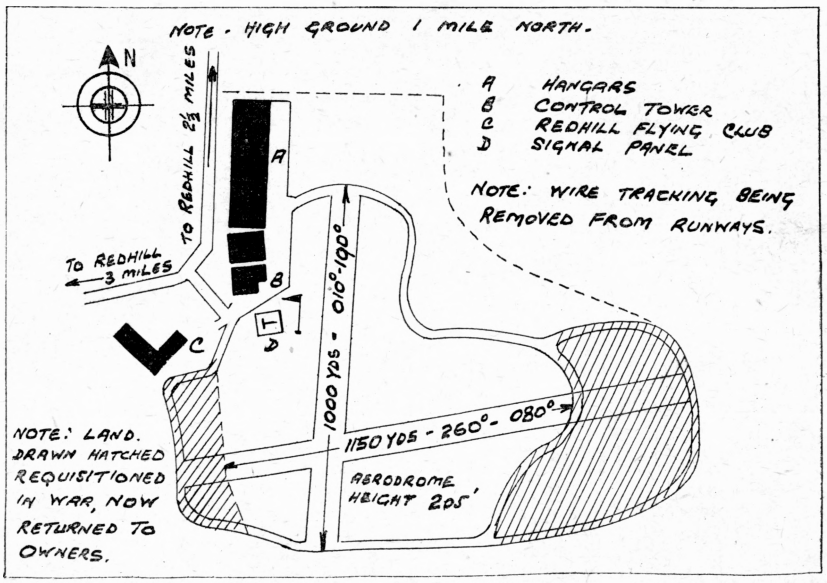
Radio Facilities: 121.86 mc/s., 116.1 mc/s. and 117.9 mc/s.

Call Sign: Redhill Tower.

Flying Clubs: Redhill Flying Club and Surrey Gliding Club.

Customs Facilities: Nil.

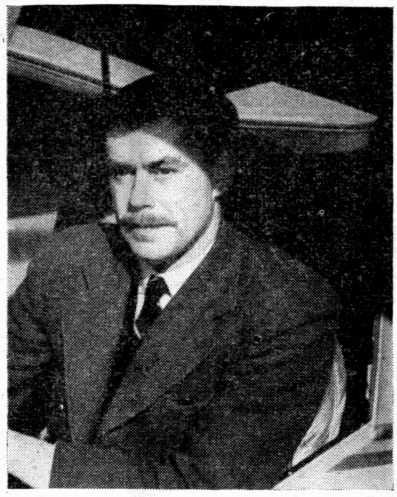
Charter: British Air Transport, Ltd.


NOTE - HIGH GROUND 1 MILE NORTH.
N
TO REDHILL 2½ MILES
TO REDHILL 3 MILES
A HANGARS
B CONTROL TOWER
C REDHILL FLYING CLUB
D SIGNAL PANEL
NOTE: WIRE TRACKING BEING REMOVED FROM RUNWAYS.
1000 YDS - 010°-190°
1150 YDS - 260°-080°
AERODROME HEIGHT 205'
NOTE: LAND DRAWN HATCHED REQUISITIONED IN WAR, NOW RETURNED TO OWNERS.

We Learn—If We Live

By HARRY BILBROUGH

No. 4 of a New Series—and we invite your experiences under this heading.



Harry Bilbrough started flying in 1937; taking his licence at the White Waltham Civil Flying Training School. He took a short service commission and was posted to the Flying Training School at Netheravon in 1938; from there he went to 110 Bomber Squadron. In 1940 he was posted to a Fighter Squadron and did long range shipping escort work. A rest tour of flying instruction was followed by an operational tour in Mosquito night fighters, including intruder operations over France and Germany. After the war he took an Instructor's Refresher course and qualified for his Instructor's Endorsement and "B" licence. In November, 1947 he took over the post of Chief Flying Instructor of Denham Aero Club and in March of that year he became a Director.

MY first major lesson happened before the war. I had just completed my Service training and was posted to a Medium Bomber Squadron in the North of England. At the time of my arrival we were equipped with Hawker Hinds, but these were being rapidly replaced by Blenheim Mk. I's. I can well remember my first day on the Station. I was watching a Blenheim taking off, when at about fifty feet the port engine cut and the pilot made a forced landing in the next field. I was not greatly impressed by that introduction, needless to say, but after the initial troubles were overcome, the reputation of the Blenheims improved.

These aircraft being rather revolutionary at the time, nobody had much experience on them, and having been shown the essentials and been given a few hours dual, we were sent off solo. As soon as we were considered safe, we were given a crew of three and started our operational training.

It was on one of these operational exercises that this "We Learn If We Live" happened.

I was briefed by the Flight Commander to carry out a photographic reconnaissance of a certain place on the Bristol Channel, and I was told that if the weather was bad I was to return. I collected my crew and told them what we had to do, and set off.

The weather was quite good at first, for there was only a little high cloud and the visibility was fair. Later on, some medium cloud appeared, and this became lower until eventually, flying at 2,000 feet, I was forced to climb above it. We were now flying at 5,000 feet and there was another layer of cloud above. Soon the two cloud layers merged, and this is where I made my first mistake. I should, of course, have returned to base as instructed. However, I flew on in cloud and soon ran into icing and very turbulent air. The ice began to thicken on the wings, and bits of ice would break off the propeller and hit the side of the fuselage with a crash. Now I had to decide whether to try and climb above it or go below it. I decided to descend. I throttled back the engine and trimmed the aircraft fully tail-heavy, for descent.

It seemed ages before we broke cloud, coming out at a few hundred feet above the sea, with heavy rain lashing against the windscreen, reducing the visibility to almost zero. I had definitely decided to go back by now, though first I wanted to pin-point myself so that the navigator could work out an accurate course back to base.

I was still flying very slowly at about quarter throttle, and peering through the blurred windscreen, when the navigator shouted, "Look out, there's a hill in front of you."

We must have been just about to strike the coast-line, for I can remember seing a black mass looming up in front. My immediate reaction was to open the throttle fully and do a steep turn, but lack of speed made that impossible. As soon as I opened the throttle the nose of the aircraft rose sharply, and I could not stop it, although I was forcing forward with both hands on the stick and trying to brace my left knee against it as well. Up she went, over the vertical into cloud, and things began to happen in quick succession. The control column suddenly went sloppy—I looked at the air-speed indicator—less than 60 m.p.h., and glanced at the artificial horizon, which was obviously toppled. Time to get out, I thought, and told the crew to prepare to abandon aircraft and open the top hatch. "We are too low," shouted the navigator.

It suddenly struck me that the turn and bank indicator didn't topple completely, so I concentrated on that instrument, which was at the time showing maximum "slip" and "turn." The air-speed was still below 60 and the engines revving madly. I eased the stick forward slowly and throttled back a little, and thus managed to get the needles central on the turn and bank indicator. Slowly the air-speed began to build up, and, still descending, I glanced at the altimeter, which didn't give me much encouragement; it was just nearing the zero mark and I was still expecting to hit the ground at any moment. Very gently I continued to descend, and we broke cloud at about fifty feet over the sea. I hastily re-trimmed and explained to the crew that I was going to climb up again and if the worst came to the worst we could always bale out. So back into cloud we went again. I was feeling very unhappy at the time, for the idea of going back into cloud didn't thrill me at all. Up we went and I thought we would never reach the top of it, but eventually we came out at 13,000 feet. I have never been so pleased to see the sun as on that day.

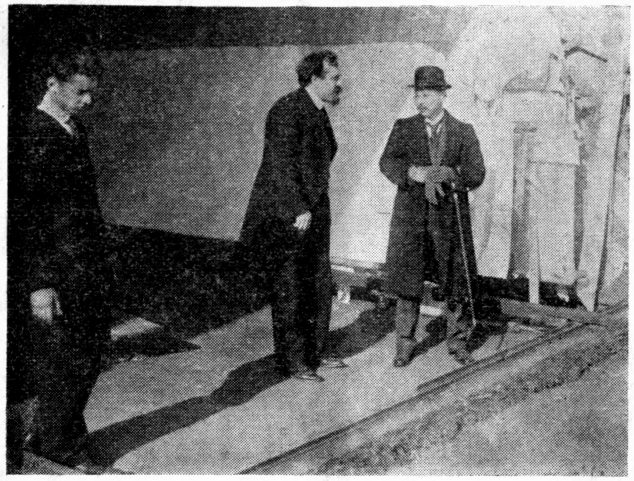
I was beginning to feel a little better now, until I asked the wireless operator to get a fixed or a homing. There was no answer at first, and then he explained that the battery was missing from its mountings, the wireless was out of order, and that he had hit his head rather smartly on the top of the gun-turret during the previous episode. The navigator went aft to see if it was serious, and gave me an approximate course to steer for base.

I thought we may yet have to "hit the silk," as the Yanks call it, for I had no intention of descending through 13,000 feet of cloud without a radio aid. As luck would have it, about twenty minutes' flying time from base the cloud shelved away steeply and there was only a little broken cloud below, through which I could see the ground quite clearly. The navigator soon found out the position and we landed safely back at base.

I learnt three things from this episode. Firstly, to pay more attention to Met., for if I had known then what I know now, I should have realised quite early on in the flight from the cloud sequence that I was approaching a "warm front" and that if I went on I should experience all the things I did in fact experience in relation to the weather. Under the circumstances I should, of course, have turned back.

Secondly, when flying on instruments, not to concentrate completely on the artificial horizon and forget about the turn and bank indicator, for it can be very useful at times.

Thirdly, to remember that the elevator trim can be very powerful and can overpower the strength of the pilot if not carefully used.



A page from the past. Samuel Cody chatting with the Crown Prince of Japan, now Emperor Hirohito; the boy at the left of the picture is now well-known as Captain H. Duncan Davis, of Brooklands Aviation.

Memories of a Great Pioneer

SAMUEL Franklin Cody. Born March 6th, 1861. Killed in a flying accident at Farnborough, August 7th, 1913.

Outlined above is the beginning and the end of the man who in the early days of aviation made flying history, and who was without doubt the first man to fly under power in this country.

Starting life as a cowboy and buffalo hunter, in America he was taught to make kites by a Chinese cook, emigrating later to England with a "Wild West" theatrical company, and in his spare time flew large man-lifting kites, which were eventually adopted by the British Government for military uses in observation and photography. After successfully fitting the "Nulli Secundus I" airship with its power plant, with Col. J. E. Capper as co-pilot, flew it from Farnborough to London. He fitted one of his kites with a 12 h.p. Buchet engine which made a free flight at Farnborough in 1907, this being the first pilotless flight by a petrol-engined aeroplane in England. Later he persuaded the War Office to allow him to build a full-sized machine, for the construction of which he was allowed fifty pounds by a parsimonious Government. This, when built in 1907, was called "British Army Aeroplane No. 1," and Cody had to wait until April 1908 for the engine of the airship which he used until the middle of June, when it was required for "Nulli Secundus II." This airship only made three flights in July, 1908, and was a complete failure.

Cody's aeroplane flew about fifty feet at the first time of asking in the beginning of May, 1908, on a clearing about 400 yards long on Cove Common. In all, five flights were made on this day, the last being about 150 feet, at a height of about eight or ten feet. Cody was so excited with his success that he failed to notice a horse trough and smashed his wing in a collision when taxying out for a more ambitious attempt. The engine was then fitted in the second airship which he moved after its return to him to Farnborough Common. He flew 75 yards on September 5th, 1908, and 496 yards in October. This flight ended in a bad smash owing to his crossing some trees in a strong wind, which caused the machine to bank steeply and, as he had to find all the secrets of flight out for himself, he applied warp, without rudder, to correct the drag which, of course, made matters worse, resulting in a fairly complete smash.

Cody rebuilt the machine and fitted it with two auxiliary front elevators which were synchronised, so that when one was at a positive angle the other was correspondingly depressed, thus neutralizing the drag and applying the necessary correction to right the machine. He also fitted the trailing edges of all lifting surfaces with tapes to enable him to "see" the upward currents and gusts, so anticipating the wool tuft craze of the nineteen-thirties.

After many flights of several miles, some of which were witnessed by Royalty, and which were usually terminated by the overheating of the small 45 h.p. Antoinette engine which, incidentally, had to provide the thrust necessary to lift a machine weighing a ton when empty. The War Secretary, Mr. Haldane, told both Cody and Dunne—who was also experimenting with a tailless "inherently stable" biplane—that the War Office had decided that aeroplanes had no future, and that they intended to rely on airships instead. Cody was therefore given his aeroplane, minus the engine, in its repaired state, and granted permission to use Laffan's 'plane for his further experiments at his own expense. This was in May, 1909.

He then purchased a French E.N.V. engine of sixty horse-power and re-designed the machine, with twin elevators, a tail-skid instead of a wheel; placed his seat in front, instead of at the rear. By August he was carrying passengers, the first being Col. Capper, his late chief, and the second, Mrs. Cody. In September he made a record cross-country flight of one hour three minutes, flying over Aldershot, Farnborough and district. Soldiers undergoing physical training and officers seeing an aeroplane flying over them for the first time at about 500 feet, made one mad rush to Laffan's 'plane to congratulate their hero, who had finally established his claim to have made a successful aeroplane.

He flew at the first meeting in England at Doncaster in October, 1909, and was promptly "suspended" by the Aero Club for three months together with the rest of the pilots, including Delagrange and Roger Sommer, the French pilots, for "having taken part in an unauthorised meeting"—the Blackpool meeting starting a few days later being the one which received their blessing. He next attempted a flight for a £1,000 prize from Liverpool to Manchester, failing on account of fog. The prize was never won.

At Doncaster he met with a bad accident owing to the front wheel of his tricycle undercarriage running into a ditch that had been filled in with sand and his great friend, Leon Delagrange, flew to his assistance in his Bleriot monoplane, this being the first instance on record of "first aid" from the air. He then prepared for the London to Manchester flight, which was won by Paulhan, after a great and gallant attempt by Claude Grahame-White to win. Owing to a tragic mistake by a mechanic which ruined the engine, Cody was never able to start. The machine being worn out, he dismantled it in December, 1909, and commenced to build Cody No. 2.

During these happenings the first Michelin Cup was won by J. I. C. Moore-Brabazon, also the *Daily Mail* £1,000 prize for a circular mile flight by a British machine. The first tests for a pilot's licence also took place. Cody could not compete for these prizes with his old machine as his engine was of French make and therefore not eligible. Finances were at their lowest, and the prize money would have been of inestimable help to Cody had he won either of them. Thanks to Fred May and Mr. Green, of the Green Engine Company, Cody acquired a 60 h.p. Green engine to fit into his second machine, which was designed for twin engines, but when he later received the second engine, the two would not synchronise, and the chain drive disintegrated. Cody modified the engine, drilling auxiliary ports for the exhaust, giving it greater horse-power, and competed with one engine only at the Bournemouth and Lanark meetings in June and July, 1910. He won Michelin Cup No. 2 with

(*continued at foot of next page*)

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Cover Photo:
Bud Abbott and Lou Costello plan a cross-country in front of their Aeronca Sedan

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We Must Repeat . . .

THE third year of peace-time private flying has nearly run its span. In assessing the position in which the movement now finds itself, certain things are seen to stand out most plainly and distinctly. Before particularising, one overall fact which dominates the entire picture must be stated: that is, we have kept things alive, in a form of suspended animation, so to speak, but we have not progressed—unless it be backward—nor expanded in any noticeable way. At best the state of affairs is static, and were it not for the efforts and enthusiasm of those concerned, things would soon grow even worse.

Now for particulars. As we have stated so often before, there are no light aero-engines available in sufficient quantity and at a low enough cost. This lack is the key to the whole deadlock, and were some designer and some financial interest keen and courageous enough to combine in supplying this vital need, we feel sure that they would not go unheeded or unrewarded.

Another point, which we have also made previously, is that in our opinion our aircraft manufacturers—such as are interested in light aeroplanes to-day—are working on the wrong lines. By this we mean no slur upon their good names, nor any inferences detrimental to their technical ability. On the contrary, they are capable of producing the finest aircraft in the world, and we are especially anxious to see them doing so.

Good aeroplane design is governed chiefly by economics, social trends and functional considerations. It is just not good enough to build a decent average aeroplane, unless it is so cheap to buy and operate that it automatically becomes a commercial success. At present there are no British light aeroplane manufacturers who may claim to have achieved this desirable result.

In all cases, whether they be private or commercial, our aeroplanes *must* be cheap to operate. Few people in this country can afford high running cost or fares. Our social trends are really bound up with economics, for there is no barrier to flying for any man, whether he is a lord or a dustman—except authority, the same body of men who before the war said that flying was a snob's game and must be made free to the masses!

Concerning functional considerations, we are on surer ground. We need two entirely different products from our aeroplane factories. For the home market we require a mass-production utility article of moderate power. It must be cheap, robust and economical. For overseas we want the best that brains can conceive, hands construct and money can buy, to compete with the best products of any foreign country.

Wanted, a new brand of pioneers.

THE EDITORS.

Personal Aircraft and their Owner-Operators—No. 8.

F. H. Wheaton, the bulldozer man, and Hermione, the West Country's well-known Autocrat.

Light Plane photo

F. H. WHEATON

IF you had been in the Control Tower at Madley (R.A.F.) Airfield at 14.30 hours on the 3rd July, 1946, you couldn't have helped noticing an agitated, perhaps excited bloke, pacing up and down outside, his ears positively perked and obviously tuned in a north-north-easterly direction. After considerable fags had been stubbed by the excited type and various periods of intent listening and eye-shading to the N.N.E. (which turned out to be Rearsby), a new Auster hove in sight. The arrival was apparently the climax to agitated's excitement; a loving look round it, and a gentle stroke here and there, and F. H. Wheaton, of Axbridge, Somerset, became the owner and loving father of Auster Autocrat G-AHHT. Tony Thompson, a pal of F. H. Wheaton's, had collected it for him, because he could not fly—yet!—although he had had some illegal thrills in a Flying Flea before the war. He sold the Flea (without C. of A.) in '46 for £10—he says Shackleton's are not the only ones who give away aeroplanes.

Mr. Wheaton, who is now the Managing Director of a firm of Civil Engineers and Land Reclamation experts, began his business in 1931 with a tractor he bought for £8, and another for 30s. to be used for spares. Out of these two he got one good one. A new one was bought the following year and worked by one employee (Albert Harding) and himself, 23 hours out of 24. He found he could make money this way and expand while his competitors continued on in their own sweet way. He was certainly successful.

Believing wholeheartedly in hire purchase (simply because he can earn 20% with the ha'pence he gets for 10%), he bought G-AHHT on the H.P., including the insurance through another pal, Arthur Harrison of Birmingham. He will never forget his first solo. After a bang round for a bump or two with Dick Penny, his instructor (another pal), he, Dick, got out, and said "Off you go." After a few arguments and assurances that he was indeed fit to fly a (real) aeroplane by himself, he opened up and went. He was very surprised to find how much lighter his machine felt to handle without a passenger, and, feeling very frightened, immediately began to sing hymns ("Abide with me"), etc., and reminisce. Half-way round the circuit, he decided, after very considerable thought, that the few murky incidents in his not very ancient past were not *too* bad and hoped they would be forgiven. So, feeling very lonely and having no one with whom to argue, he felt it would be better to keep singing at full volume (the only songs he knows are "Horsey, keep your tail up" and "Yes, we have no bananas"). However, a perfect landing was made (wheeler), to his extreme relief and also to various instructors and ground staff who invariably peep under kites, hoping the victim won't know they hoped to be in at the kill (even with one eye).

Mr. Wheaton has now been using his Autocrat for two years, averaging three hours per week visiting his machines on contract work that are scattered over a wide area in the South-West. He has a dozen bulldozers, various trenching machines and tractors, etc. His favourite work is bringing back to cultivation derelict land, of which he reclaimed over 500 acres last year. His firm removed about 300 miles of hedges, 20,000 tree stumps, 11,000 tons of concrete—obsolete War Department defence structures—excavated about 110 miles of trenches for water supply and land drainage, 120 miles of road, 200 building sites, took off 50,000 tons overburden from quarries, constructed numerous playing fields, football pitches., etc., and used tons of high explosives. He now employs about forty men, all experts and highly paid. His foreman mechanic, F. Cleal, had in his pay packet £24-odd for one week (including his car expenses). Each employee of six months' duration is given by Mr. Wheaton twenty £1 shares, and if he wishes to buy more up to a maximum of 40 he is given another like amount, so that he may hold a hundred—dividends to be paid at Christmas.

He has calculated that a round tour of his contracts would involve a trip of 300 miles, which would take two days, as most sites are inacessible, but by plane only 200 miles and an excellent view can be obtained of progress and the trip would take just over two hours, using less petrol than by car. The advantages Mr. Wheaton values most are the enormous saving in time, which ensures up-to-the-minute knowledge of how things are progressing. Sometimes this has its lighter side, such as the day Mr. Wheaton was flying over a gang using high explosives. They (the gang) endeavoured to fire a charge when he was exactly overhead—no doubt muttering amongst themselves, "That'll larn 'im." Anyway, it added to the excitement, and Mr. Wheaton, being well fortified with a strong sense of

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Home Airfield: White Waltham. **Address:** West London Aero Club, White Waltham Airfield, nr. Maidenhead, Berkshire. **Nearest Rly. Stn.:** G.W.R. Maidenhead. **Secretary:** Mr. F. H. McDouall. **Flying Instructors:** Miss J. L. A. Hughes, Mr. W. Hampton. **Tel. No.:** Littlewick Green 272 and 273. **Flying Rates:** Tiger Moth, £3 10s. dual, £3 solo; Hornet Moth, £4 dual, £3 10s. solo; Fairchild Argus, £6 dual, £5 solo; Gemini, £8 dual, £7 solo. These rates can be reduced by the purchase of block vouchers. **Subscription Rates:** 5 guineas per ann. Temporary monthly membership 10s. 6d. **Fleet:** 2 Tiger Moths, 4 Hornet Moths, 3 Fairchilds, 1 Gemini. **Facilities:** Club Bar and Restaurant.

Key 5—**SOMERSET**

Weston Aero Club Ltd.

Airfield: Weston Airport. **Nearest Rly. Stn.:** Weston Milton. **Tel. No.:** 2700. **Secretary:** S. J. Cox. **Address:** The Airport, Weston-super-Mare, Somerset. **Fleet:** 2 Austers, 1 Tiger Moth and 2 Fairchild Argus aircraft. **C.F.I.:** R. Wardle, O.B.E. **Rates:** £3 per hour dual or solo (£5 Fairchild). Fly-Yourself-Hire from 7 gns. per day. **Catering Facilities:** All meals available, and fully licensed Bar. **Subscription:** £3 3s. per annum. **Remarks:** Buses to and from town stop at Airport.

Key 6—**WILTSHIRE**

Wiltshire School of Flying, Ltd.

Home Airfield: Thruxton Aerodrome. **Nearest Rly. Stn.:** Andover. **Tel.:** Weyhill 352. **Address:** Thruxton Aerodrome, nr. Andover, Hants. **Secretary:** Sq/Ldr. J. E. Doran Webb. **C.F.I.:** Fl/Lt. B. E. J. Hawkins. **Instructors:** Fl/Lt. P. N. H. Gush and Mr. F. Bradford. **Fleet:** 7 Austers, 2 Magisters, 1 D.H. Dragon. **Rates:** from £2 12s. 6d. per hour, dual and solo. Courses: 'A' 'B' and Instructor's Licences. Night Flying: from £3 5s. per hour. **Residential facilities:** Fully licensed Bar and Restaurant. **Subscription Rates:** Yearly—Flying membership £3 3s., Associate membership £2 2s.: Monthly—Flying membership 10s. 6d.

London Aeroplane Club

Home Airfield: Panshanger Aerodrome. **Nearest Rly. Stn.:** Cole Green. **Tel. No.:** Essendon 305. **Address:** The London Aeroplane Club, Panshanger Aerodrome, Hertford. **C.F.I. and Secretary:** D. A. D. Cather. Flying instruction for Pilot's "A" and "B" Licences and Instructor's Certificates on Tiger Moth and Hornet Moth aircraft. £3 10s. per hour dual or solo. Fully licensed Bar and Restaurant.

Key 18—**SURREY**

Redhill Flying Club

Home Airfield: Redhill Aerodrome. **Address:** South Nutfield, Redhill, Surrey. **Tel. No.:** Nutfield Ridge 2245. **Nearest Rly. Stns.:** Nutfield (1 m.), Redhill 3 m.). **Secretary and C.F.I.:** A. S. Burridge. **Flying Rates:** Solo £3, Dual £3 10s. 0d. **Subscription:** £3; entrance fee £2. **Fleet:** 3 Austers, 3 Magisters. **Catering Facilities:** Week-end accommodation. Fully licensed. All meals. Hangarage and maintenance for private aircraft.

Key 19—**LANCASHIRE**

Lancashire Aero Club

Airfield: Barton, Manchester. **Nearest Rly. Stn.:** Patricroft. **Tel. No.:** Eccles 1866. **Secretary and C.F.I.:** W/Cdr. W. L. Woodward, A.F.C. **Address:** Barton Airfield, Eccles, Lancs. **Fleet:** 3 Auster I's, 1 Auster Autocrat, 2 Tiger Moths. **Rates:** £3 per hour dual or solo. **Subscription Rates:** Flying Sub., 5 gns.; Entrance, 2 gns. No overnight accommodation. **Remarks:** Founded 1922.

Key 24—**GLAMORGAN**

Cardiff Aeroplane Club Ltd.

Address: Pengam Moor Airport, Cardiff. **Telephone:** Cardiff 52. **Secretary:** Mr. W. E. Harpur. **Manager and C.F.I.:** G. M. S. Kemp, M.B.E. **Flying Rates:** Dual £3 per hour, Solo £2 per hour. **Entrance Fee:** £1. **Annual Subscription:** £3 3s. **Fleet:** Two Tiger Moths, one Hornet Moth, one Auster Autocrat. **Catering Facilities:** All meals available and fully-licensed bar.

(For Key Numbers, please refer to Map in previous issues.)

have been held, particularly over the Christmas period. The increasing interest in flying is most encouraging, especially considering the all too frequent spells of poor weather. Such weather conditions have hardly helped at the initial dual stages, so we warmly congratulate Mrs. Helen Walker on achieving her first solo. All members will miss Mrs. Nan Bath as she leaves shortly for a well deserved holiday in South Africa. Although she did not pilot any of the club aircraft, she has plenty of passenger hours, and has done great work on the social side.

Mrs. Dorothy White, well known to members of the **Lancashire Aero Club,** having taken her W.J.A.C. wings and "A" licence there, is welcomed back again as a member. The club reports that although considerable progress was made in 1948, it was not quite as much as they would like, but if this progress continues at a slightly greater rate, the club's position will be far more favourable than it has been. New members are needed, and more flying by existing members would be a great help.

An extension of club flying facilities for members of the **Hereford Aero Club** has come about with the formation of a new company, Inter-City Air Services. Aircraft (Hereford) Ltd. have purchased the aviation assets of Autocars (Worcester) Ltd., and have adopted the new title. With the establishment of an aero club and gliding club at Worcester, the members of both clubs will be able to enjoy an interchange of facilities. It is hoped that the existing low subscription and the large membership of the club will set a fashion for affiliation of clubs in neighbouring areas. The new company will provide an air-link between the cities of Hereford and Worcester, and it is hoped to get Perdiswell Airfield, on the outskirts of Worcester, into operation again; until then the company anticipate the use of Pershore. The fleet will be considerably increased with the addition of Rapides and Proctors, and the purchase of an amphibian is contemplated for the spring.

Cowes Aero Club tell us that the depression which is said to exist in some parts of the country is certainly not seen at Somerton. Holiday-makers and residents have kept aircraft in the air throughout the past year, and a whole series of enterprising and novel events maintained interest and enthusiasm in summer and winter alike. Of the people who flew with the club in 1948, 47 members obtained or renewed their "A" licences, while approximately 150 members took refresher or advanced instruction. There were 200 dual flights and 700 or more solo flights. In recent months the hire of the Auster Arrow at £2 per hour solo has proved exceptionally popular, and professional pilots in need of building up their hours for particular licences have taken advantage of this to a very liberal extent. Programmes for 1949 are now in hand. Special attractions are being considered, including a monthly Air Rally with "all the fun of the air," and, if permits allow, extensions of the clubroom. The New Year was started off with an Annual Dance which followed the best flying club traditions.

Calling in on the **London Transport (Central Buses) Flying Club,** we were just in time to observe a lady with a four-year-old boy, both wrapped up like arctic explorers, being strapped into the passenger seat of Tiger Moth G-AIIZ, which was off on a mission of mercy—the altitude cure for whooping-cough. With C.F.I. Ted Baker at the controls, the lad, a nephew of a club member, was taken to a height of 12,000 feet, remained at that altitude for twenty minutes, then was brought in on a long steep glide. Later reports confirm that the vexatious cough has been completely cured. Whilst at the club, we gleaned some interesting information that should assist to explode the myth concerning the so-called Service prejudice against the club-trained flyer. John Mars (Conductor, Upton Park) served in the R.A.F. during the war in an air-crew capacity, but failed to make the grade as a pilot, and served as a bomb aimer. He has now re-enlisted into the regular Air Force, and by virtue of the fact that he has gained his "A" licence and become a proficient pilot under the instruction of Ted Baker, has been accepted into the service as a pilot. Having already taken note of the error in our report on the visit of the Air Minister to the club, we were not surprised to see our very good friend "Nick" Nicholson advancing in our direction with an ominous gleam in his eye. We were, however, able to assure him that it was our intention to correct the mistake in this issue—the present flying rates should, of course, have read fifteen shillings and not five, as stated.

On completing our programme of club visits for the month, we left Fairoaks and returned, somewhat wearily, to the office, where news of a flying club, newly formed just outside Versailles, awaited us. After reading of our own clubs' difficulties, triumphs, celebrations, trials and tribulations, readers will probably find it interesting to compare them with the conditions at this French club.

Over 3,000 people, including former King Peter of Yugoslavia and his Queen, and French Air Secretary Moreau, gathered at Toussus-le-Noble at the inauguration of "Air-Tourist" at the airfield. Enthusiastic spectators were entertained with an afternoon of aerial acrobatics, parachute jumping and a display of French and foreign touring planes, not forgetting a **free buffet** where **850 bottles of champagne** were consumed in just under two hours. In a halo of glorious sunshine, Piper Cub, Miles Magister, Ercoupe, Navion, Beechcraft Bonanza C.18 and C.17 (belonging to the Air-Tourist fleet), Lignel, Norécrin, Courlis and Max Holste aircraft looped and dived. Lieutenant Robert Cartier made a spectacular parachute jump, falling through space for 18 seconds before pulling the cord, then hitting the ground about a hundred yards from the crowd. This event followed a much appreciated display by the Etampes Acrobatic Patrol, led by Captain Perrier. The highlight of the show was a courtesy visit paid by a jet-propelled Gloster-Meteor Mk. 7, piloted by test-pilot Waterton. The scarlet bird roared three times over the field, then melted into the horizon, cheered lustily by an excited crowd of bewildered spectators.

As to the details of the Club's organisation and so on, well, the hangar surface is approximately 3,000 square yards; they have workshops for almost any repair, a clubhouse with restaurant and bar, a cloakroom with showers and a telephone, and station-wagon service to the nearest town, which is Versailles. The General Manager of Air-Tourist is Monsieur Jean Avot, and the Club Secretary is Monsieur Tom Barclay. Chief pilot is Monsieur Roger du Chesne. They have a team of six mechanics, which will probably be increased to eight in the near future, and three experienced and well-qualified pilots permanently in attendance.

Book Review

A.B.C. OF AIRPORTS AND AIRLINERS, by O. G. Thetford.

Published by Ian Allan. 3s. 6d. net.

This is a pocket reference of 92 pages intended to form a *vade mecum* for travellers, spotters or even mere loungers who frequent, inhabit or even merely lounge at the British taxpayers' airports.

There are lists of the services operating to and from Britain, also lists of the fleets of all the companies concerned. The latter would be the better for a few amendment pages, as it is the writer's experience that even with periodical publication of such inventories it is inevitable that one is always a move behind.

The many photographs and silhouettes of airline aircraft are mostly familiar ones, and the airport maps would be of dubious help to a pilot arriving as a stranger to the places. Heathrow, for example, is merely a chart of the runways, old style at that, and the Bath Road is not even named, nor any indication given as to the geographical situation of the place whatever.

humour, prefers anything to a quiet life. The ease with which a site can be approached from any direction keeps employees on their toes, and to call by air on contracts Mr. Wheaton considers to be a very refined way of taking a quiet look (he has a silencer on his Auster). After a couple of circuits of the site and two or three runs with full flap into wind alongside, he has a comprehensive picture of the work in hand. Moreover, the customer is greatly impressed by Mr. Wheaton's modern transport—incidentally, all his machinery is of the latest American manufacture. He rarely lands at sites without prior ground inspection. Two rough fields have cured him of that hobby, although nothing has ever been broken or bent, thanks to the apparent lack (or vice versa) of springs in the undercart. A little while ago at midday a shaft broke in one of the machines. The makers were telephoned and asked to take the replacement to an adjoining airfield. This spare part was collected in two and a half hours and fitted the same day. Normally this would take a day to collect by road, three weeks by train (if at all)—a great saving in cash and time—particularly so if one remembers this machine equals seven hundred men with picks and shovels.

Mr. Wheaton prepared his own landing ground at Chard with two 600-yard grass runways, with the blessing and backing of the M.C.A., who supported him wholeheartedly in his endeavours to bring about the removal of some overhead electric high tension wires. He now lives near Weston-super-Mare and keeps his aircraft there. Unfortunately he finds it expensive to hangar and maintain his machine at a State-controlled airport, but the cost of flying he finds economical, particularly in the saving of time, *only* if at least three hours per week are done. Otherwise the cost is high per hour. Occasionally friends hire the machine and are charged 30s. per hour, they to pay all expenses in addition.

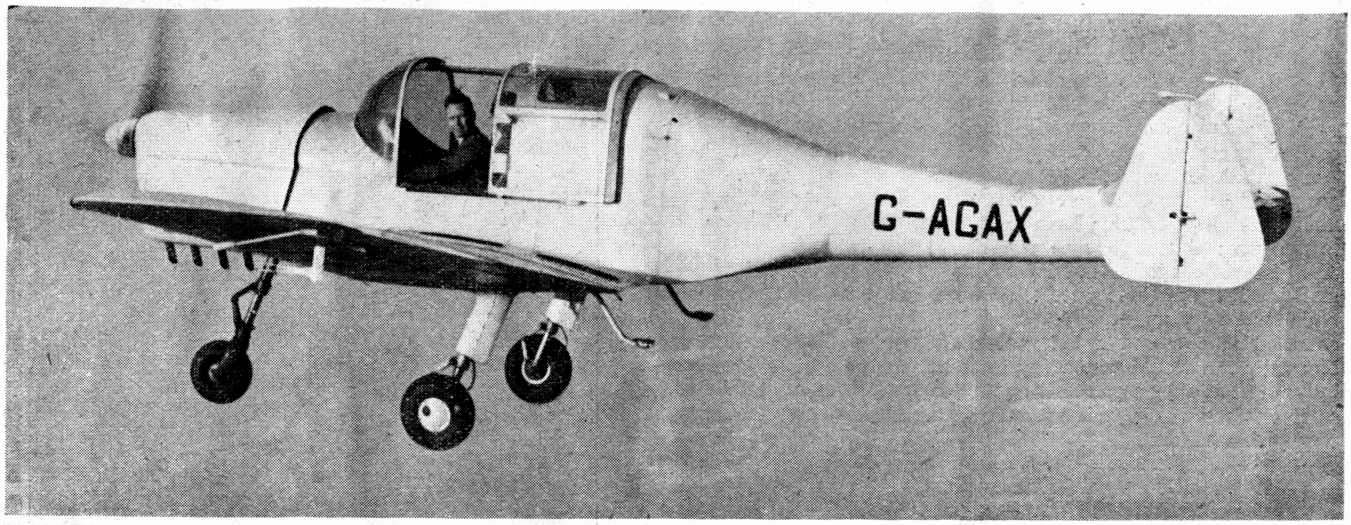
Mr. Wheaton met a Dutchman at the International Air Rally at Gatwick, when the R.Ae.C. entertained foreign guests. His name was—you guess! Yes, that's right, Uges—R. Uges, Jnr.,

(*continued on page* 6)

F. H. Wheaton briefing his Pilot, Miss M. Brown (" Midge ").

One of F. H. Wheaton's trenching machines at work, laying agricultural land drains.

Light Plane's **Test Pilot, Stanley Orton Bradshaw, reports on**



Photograph by E. J. Riding

The G.A. CYGNET

EVEN before the owner of G-AGAX, one of the four remain- G.A. Cygnets, so kindly made it possible for us to test fly her, we viewed the said possibility with more than usual pleasure. In the first case, there is always " something " about sampling an aircraft among the last of a type, even if it has not achieved fame nor been produced in large numbers. On the contrary, comparative rarity is one of the attractions. However, our interest had a more tangible form than that. From hearsay and photograph, it had become obvious to us that the Cygnet contained many features of great interest and generally resembled the " modern " formula for light personal aircraft. To fly and inspect the Cygnet would be a splendid opportunity for furthering our researches into the degree of progress we have or have not made in light aircraft design in the past ten years. The test again left us with the feeling that on the whole we have not made so very much progress and that the General Aircraft Company had, in 1938, evolved just the sort of thing our manufacturers ought to be concentrating upon to-day. Something, that is, easy and near-foolproof to fly, with a good all-round view both on the ground and in the air, and all the advantages of the tricycle undercarriage.

Construction

The Cygnet is all-metal, on the stress-skinned system, and was the first British design in the light class to be so constructed. It will not be generally appreciated in these days of almost universal metal construction that at the time of its inception the Cygnet was something of a technical and financial plunge, for the light aeroplane market was, in 1938, distinctly affected by the rearmament programme and threats of war, and the commercial history of aeronautics has been littered with the wrecks of unconventional conceptions, no matter how clever or practical they might have proved had they been given a chance.

The fuselage is particularly interesting. The rear portion is something between a boom and a normal " rear portion," supporting the twin-tail assembly. This rear portion is a tubular monocoque, braced by circular plate-diaphragms. The centre section is a plated and framed structure, supporting at the front, upon a steel tube assembly, the engine, which is a Gipsy Major I or Cirrus Major. The monocoque butts, at its forward end, into a circular frame aft of the cockpit, and this is braced to the forward structure by steel tubes. In the Hawker Typhoon fuselage we find just the same feature. The wing is an orthodox two-spar, stressed skin structure, with solid diaphragm ribs. The material used throughout, by the way, is Noral, a " sandwich " system using pure aluminium plated on either surface of a high-strength metal. The plating, by the way, obviates the need for any other protective treatment, although 'AX is actually painted and protected both inside and out. The centre section, which also carries the main undercarriage legs, is integral with the fuselage centre structure. The main legs are attached by magnesium castings bolted into the rear-spar root fittings, and the whole structure of the machine is plain and robust to a degree, using extrusions and castings to obviate fancy built-up fittings. The result is a most robust and serviceable job. To quote from a letter from 'AX's owner, support for our impressions is to be found in the following extract:

> " The cost of a C. of A. is most reasonable. There is no fabric to remove and replace when inspecting controls, etc. Quickly-detachable inspection covers enable control points to be easily inspected."

The writer of the above remarks, who is Mr. R. C. Cox, is a consulting engineer by profession and an A.F.R.Ae.S., besides being an experienced owner-pilot, so his views are of especial weight and interest.

The cockpit is naturally the centre of interest for all pilots and small boys, and on the whole the excellence or otherwise of the remainder of the machine is not unnaturally apt to be overshadowed by general impressions in the " cab." After all, if ingress and egress to and from this portion is almost impossible without a shoe-horn; if, when inside, one's knees are thrust under one's chin, or one's skull is forced down by the canopy, if there is only half a field of view, or some controls are well nigh unreachable, or some fitting sticks into one's anatomy, then even if the whole contraption *is* the aerodynamicist's dream, the mere pilot is strongly inclined to pass jaundiced judgment upon the efforts of the slide-rule fiddlers, even to avoid flying it at all.

It would be a severe stretching of the truth to try to pretend that the Cygnet is any aerodynamicist's dream, for it flies like no fighter. On the other hand, its flying characteristics most definitely are the result of considerable thought and do express the aims of the designer, who plainly had certain objects in view when he laid out the Cygnet.

From the first moment, the cockpit of the Cygnet creates a

at the White Lion, Portway, on December 17th, and although fog kept many away, it was a very entertaining evening. On December 19th a party was organised for 65 children of members, the highlight of the event being the arrival of "Father Christmas" by air, who distributed gifts to everyone present. A sit-down tea was arranged and the tables were heavily laden with every imaginable luxury in the edible line. We are sure the children enjoyed themselves, and we have a sneaking suspicion that the parents found the proceedings equally entertaining. The Christmas festivities produced a fitting climax to the social events of the year, there being a record crowd on Christmas Eve, Boxing Night and New Year's Eve. The dance on Boxing Night was the most hilarious party ever held in the clubhouse, and as a result it was agreed that in future a dance on similar lines will take place on the second Wednesday in each month. Lectures given every Wednesday are continuing to draw a large attendance, and question time always shows the high amount of enthusiasm amongst members.

On to the **Derby Aero Club,** which continues to be a popular rendezvous for the air-minded inhabitants of the district. Although the adverse flying conditions seriously curtailed air activities during the day time, the inclemency of the weather didn't prevent members from enjoying their Christmas party on December 23rd. The Scottish fraternity were well catered for on Hogmanay, when a dance was held in the clubhouse and the New Year was "seen in" in the traditional fashion. A series of lectures has been organised to fill in the remainder of the winter evenings, and the syllabus has been compiled with a view to making enthusiasts more familiar with Meteorology and Navigation, as these subjects will be embraced in the new licensing regulations for private pilots.

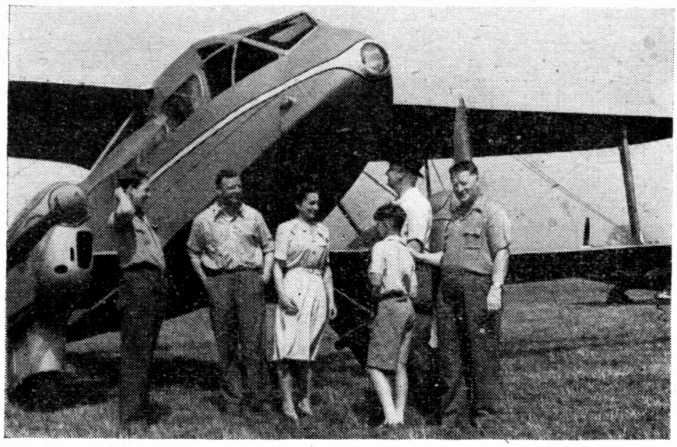
At Sherburn-in-Elmet the month of December produced comparatively few flying hours for the **Yorkshire Aeroplane Club,** in fact the weather on several days completely prohibited flying of any kind. The social side, however, came to the fore, and on December 10th the club held its third post-war Annual Ball at the Hotel Majestic, Harrogate. Over 300 members and guests attended, who, after an excellent dinner, danced to the music of Conri Tait and his band. A first-class London cabaret was followed by the presentation of the Ronald H. Braime Navigation Trophy by Mrs. A. Catton to Mr. D. H. Wyatt. There is good news for members of further reduced flying rates; Austers are now £3 10s. per hour dual, and £2 10s. solo. The club was fortunate in having Mr. J. Taylor, head of the Shell Aviation Department, visit them on February 9th to give a lecture on "A Pilot Reminisces on 33 Years' Flying." Arrangements have been made to have a repeat performance of the Shell-Mex film "How an Aeroplane Flies," and many members who were unable to be present at the first performance last year will probably be very grateful for this new opportunity.

A call at Bridlington and the **East Riding Flying Club** provided us with a few facts of their past year's activities. During the year the club flew 600 hours and passed out 16 pilots for "A" licences. In addition, 15 "A" licences were renewed. Congratulations to Messrs. Read, Chippingdale and Brown for obtaining their "B" and Instructor's licences. The youngest flying member, Jeffrey Mann of Wakefield, who commenced his flying training in the summer at the age of 15½, has completed the full pilot's course, logging some 30 hours' flying instruction, including aerobatics, instrument flying and navigation. He is now eagerly awaiting his 17th birthday before obtaining his much awaited first solo flight and "A" licence. More congratulations due to Mr. D. Jackson for winning the President's Cup as the best all-round club pilot for 1948, and also to Mr. R. Frank and Mr. L. Wilson for winning the Navigation and the Forced-landing trophies respectively. Membership now stands at 192 and the fleet comprises five Austers and one Tiger Moth. A revision of flying charges has been made. Rates are now £2 5s. per hour dual and solo on Austers, and £3 per hour on the Tiger Moth. Block flying (20 hours) is at £1 15s. per hour.

Alternate fogs and gales proved a serious handicap to flying in Scotland during the latter part of last year, cutting down the **Strathtay Aero Club's** flying hours considerably. Interest is nevertheless unabated and ten new members have joined. The social side of the club's activities, too, is enjoying success, there having been two well-attended dances and the Hogmanay Dinner Dance, which was, of course, a big celebration. One member, Mr. Norman Anderson, is disposing of his Widgeon aircraft and has acquired a Tiger Moth; another, Mr. George McLean, took a party of friends to the Motor Show in his Messenger—he seemed relieved to set foot on Perth Airfield after a somewhat venturesome trip. Following the Annual General Meeting held on October 20th, it is announced that Mr. J. Ure Primrose, the Lord Provost of Perth, has been elected President of the Club, succeeding the late Major J. R. Couper, D.S.O.

The new clubhouse at the **Blackpool and Fylde Aero Club** has become very popular and a great asset during these long winter evenings. The official opening night will be related in another issue, but to date many pleasant informal parties

The Brough Flying Club recently held a dinner and ball. Amongst those present were:—*Front row*: Mr. G. A. Kerr, Mr. T. Bancroft, Mrs. Bancroft, Mr. Peace, Mrs. Peace, Captain Macpherson, the Misses Dickenson. *Back row*: Mrs. C. White, Mr. C. White, Mrs. G. A. Kerr, Mr. Norland-Norton, Mrs. Ashley, Mr. Ashley.



Admiring the Rapide are some of Broxbourne's stalwarts, including Peter Ayles, *second from left*, Buster Frogley, *second from right*, and "Teddy" Darlow, *extreme right*.

Light Plane photo

Club Crawl . .

THE **West London Aero Club** at White Waltham is continuing to make very satisfactory progress for the winter, with the Club's instructors being kept busy whenever the weather allows. Social activities, as far as dancing is concerned, have been made much easier by the kind loan of a magnificent radiogram by Mr. H. F. Buckmaster. For the benefit of its members, the club is organising a series of lectures on Navigation and Meteorology; the first in the series was given in December by Mr. Philip Wills, the famous glider pilot. Captain H. Winch, a member of the Household Brigade Flying Club, which is attached to the West London, took off for Australia in his Gemini, G-AKEH, on December 31st. West London and its affiliated clubs wish him the very best of luck.

From White Waltham we were all set to make our monthly tour of various clubs all over England—first stop Broxbourne. The grand total of flying hours at the **Herts. and Essex Aero Club** for 1948 was 3,062, 139 of which were flown during December. For this club, 1948 was well spent—26 new "A" licences were gained and 67 were renewed; membership on December 31st was 320 and included representatives of Aden, Canada, Norway, Holland, Switzerland, Trinidad, Australia, New Zealand, Denmark, Italy, France, Greece, Cyprus, India and Ceylon. Private owners based at Broxbourne now possess two Geminis, two Messengers, four Austers, a Mohawk, a Leopard Moth and a Rapide, all of which are maintained and serviced by the Club. The aerodrome Pig Club, too, has completed a most successful year of operation, five pigs having been produced for home consumption and a similar number having been sold to the Ministry of Food. The club's chickens provide the necessary accompaniment on the breakfast plate. The new hangar to replace the one destroyed in the fire in June, 1947, has now been completed. Regular charters and freight flights are carried out in the Rapides and Proctors. The Annual Dinner and Dance was held as usual at the Park Lane Hotel, Piccadilly, and was attended by over 300 members and guests. The toast of "The Club" was proposed by Mr. Geoffrey de Freitas, and the response came from the Chairman, Mr. Victor Ercolani. They tell us it was a very happy evening indeed, thoroughly enjoyed by all.

The Committee, elected at the meeting convened by the Luton Corporation on December 20th, have had under discussion methods of continuing the operation of the **Luton Flying Club** and a scheme has been put forward to the Corporation. In the meantime, in order to cause the minimum inconvenience to members and to ensure continuity of operation at the club, Hunting Flying Clubs, Ltd., has generously agreed to operate the club until the end of the present membership year, i.e., February 28th. By this time the requisite arrangements between the new organisation and the Corporation should be complete.

A quick call in at Sywell, where the **Northamptonshire Aero Club** told us they are holding their 21st Anniversary Air Display on May 21st. In the abyssmal depths of these cold winter months it seems as if May will never come, and although our well-wishing is rather premature, we hope they have an unfailing success.

The **Coventry Aeroplane Club** sucessfully held its first post-war Annual Dinner-Dance on December 18th. One hundred and sixty members and friends arrived and enjoyed an excellent meal with some very good dancing afterwards. As is usual at any form of aviation event, the bar also proved a great success. In a speech by Mr. Philip Handley, a prominent Coventry citizen, tribute was paid to the assistance being given by Armstrong Whitworth Aircraft, Ltd., to the club, and the folly of letting clubs slide into oblivion for lack of official Government support was pointed out. Throughout 1948 the Club has flown about 600 hours on its three aircraft (two Moths and an Auster), and in view of the poor summer, we think this is quite a stout effort. A number of "A" licences were secured, and it is interesting to note that the club has two boys, both under 17, each training hard in the hopes of taking his "A" licence on his 17th birthday. Membership stands at 172 and they are looking forward to further increasing numbers this year.

A further informal dance was held by the **Midland Aero Club**

Drinking at Denham Aero Club are (*left to right*) Cliff Holdup, John Dunn, Pam Bilbrough, Jimmy Hanley, the well-known actor, Ken Hagyard, Barbara Gubbins, Jimmy Milli and Harry Bilbrough.

favourable impression. To get in or out is simplicity itself (no fear of acrimonies anent laddered nylons here!). There is ample width and depth and length. The two halves of the capacious canopy can be slid back independently, and they move without any of those irritating snags and tight spots so often met with. Behind the seats is a capacious luggage compartment, and there, also, is the battery, very accessible and cool. The panel is simple, but adequate. The engine controls are duplicated on the left and right sides of the cockpit, though the brake-lever, operating the brakes on the common differential system, is central and just forward of the seats. Between the seats is the flap control (Theed vacuum system). This is a disc with a pointer indicating that the flaps are up or down—there is no intermediate setting. The flaps are split-type. The petrol cock is up on the left of the facia and is All On or All Off and operates a very interesting indicator. This shows through a segmental cut-out and shows Off, but nothing when the petrol is On. A capacity gauge is, of course, fitted.

Starting is by hand and follows the usual Gipsy procedure, which consists of agitating the pumps and pulling the wire toggle and sucking in a moderate amount.

While warming up, another review of the cockpit is possible, and it reveals several more features we had previously missed. The two halves of the canopy, or perhaps doors is the better word, have stops in the runners, so that they may be adjusted open to any desired amount. It has been discovered since the test that the design of the canopy allows for flying with it open in summer weather. The top panels are tinted to diminish glare. Both seats are adjustable fore and aft, they have slip-on mud covers and accommodate parachute packs.

Handling and Flying

Adjusting the brake lever a couple of notches on taxying is a simple and satisfying procedure. The view in front and down is excellent, indeed it is very good all round, except straight to the rear. Some mental effort is required to relinquish one's grip on the control column and to concentrate upon the rudder pedals and throttle when in motion. It is quite safe to taxi at high speeds, but personally speaking, the finer susceptibilities forbid. In short, all the usual advantages and characteristics of the tricycle undercarriage are to be met with in the Cygnet, down to the rather pronounced pitching when traversing rough ground. Softer springing and long-travel oleos, with fairly stiff damping, would probably diminish this considerably, though it is of greater psychological than practical moment.

Taxying can be brought to a fine art in this machine, for the braking is excellent and the view likewise, and the throttle being of the normal lever type, finely graded operation can be indulged in a way that is never possible with the popular American push-pull pattern.

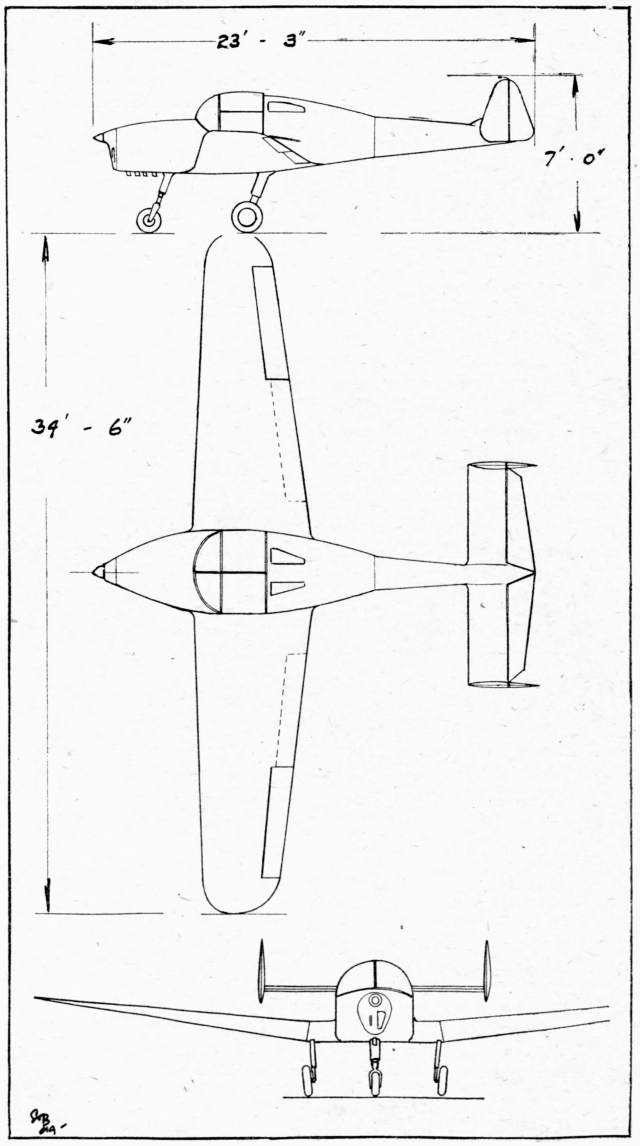
The take-off calls for little criticism. Thanks to the twin-rudder arrangement, swing is quite absent and this device would be sufficient to eliminate this annoying feature of itself, without the extra help from the tricycle underparts. The one point of disapproval that can be raised is the reluctance, common to machines with " trikes," to unstick without a strong hint from the pilot. This is not surprising, as the mainplane is running at nothing very much in the way of incidence angle, but the novice in tricycle types should be prepared for it. Left to itself, the Cygnet gives the impression that it would cheerfully run through the boundary hedge on the opposite side of the aerodrome. This embarrassing contretemps is easily avoided, however, by a gentle tug backward on the column at 50 m.p.h., and then the climb is commenced at a surprisingly steep angle. (The writer has always held that this initial angle of climb is the important feature in light plane take-off.)

For take-off, and in most conditions of general flight as well, the trim seems satisfactory if set, and left, in neutral. The control is a lever inside the throttle and looks rather like a mixture control. The modus operandi is by way of trim-tab on the port elevator. The trimmer is rather unduly sensitive, so that it is well that very little adjustment is called for in flight.

The initial rate of climb, at an indicated 75 m.p.h., seemed to conform satisfactorily to the maker's original claim of 800 ft./min.

The design was carried out with a view to making the machine very nearly foolproof. Hence the pronounced dihedral, the twin rudders and straightforward features of the design seen in plan form. Great care was also given to choice of aerofoil section and characteristics, as might be imagined.

The result is a machine which is almost completely innocuous and yet flies normally and well, without any of the limitations or crudities of the usual " foolproof " types. It occurs to the writer that in lauding the Ercoupe in particular, and one or two others in general, a year or so ago, we all overlooked the existence of the Cygnet, in which all the features which captivated us in 1947 had been done in this country several years before. The Ercoupe will not stall nor spin, neither will the Cygnet, to any noticeable degree. Apart from the general layout, both resort to the device of limiting the elevator up-travel, and completely confound the Jonahs by so doing. But the Cygnet is the superior flying machine of the two, for whereas the Ercoupe wallows when climbing and the directional accuracy suffers on account of the coupled controls, the Cygnet is as directionally precise as the proverbial arrow. A very



inexperienced pilot could fly it without harm, and Mr. Cox's sixteen-year-old son does excellent circuits and landings in 'AX.

The Cygnet will not stall, but does take on a high rate of sink. The stall occurs at about 46 m.p.h. flaps down, and a shade over 50 m.p.h. flaps up. 'AX has a tendency to drop the left wing and settle into a loose left-hand spiral and in a very flat attitude if kept stalled, which must be something to do with rigging, but it takes a great deal of persistence to get the speed to topple down below the so-called stalling point.

Turns of all steepness are very easy, though "top" rudder is needed when they are steep. Normal turns may be made with the "stick" only. Sideslipping is also satisfactory. The controls harmonise well, although the elevators are lighter than the others and the rudder stiffest. Aileron control is heavier than usual in such a machine, but very effective right down to 50 m.p.h. At 2,100 r.p.m. the indicated cruise is 110 m.p.h. Mr. Cox frequently flies from Fairoaks to Castle Bromwich in 1 hour 10 minutes overall, including the door-to-door bits at each end, which implies that the A.S.I. in 'AX is not far in error.

Landing is too easy and it is quite permissible to fly into the ground, but instinct forces one to ease off the final contact with Mother Earth. Considerable latitude is allowed for in the final approach speed, as a quadrant on the A.S.I. dial indicates a very catholic range of permissible speeds extending from 60 m.p.h. to 85 m.p.h.

This experience with the Cygnet confirms the writer's impression that here is the formula for the ideal personal plane, except that the minimum seating should be three and not two, and things like engine starters are nowadays indispensable. Quietness must also receive more attention. If our manufacturers could produce two versions, a cheap utility one for the British, and a real luxury job to fight our battles in the export market, we might begin to recover lost ground.

A few facts anent 'AX's history are as follows. She was the last of the type off the production line at G.A., Ltd., in 1942. During the war she was used chiefly for liaison work between the company's factory aerodrome and the Service stations. Pilots' names mainly appearing in her log are the company's pilots, but others, such as the late Robert Kronfeld's, occur often. "Timber" Woods, who landed the big Monospar on a coral reef in the Timor Sea before the war, is another.

Specification

Weight empty	1,450 lbs.
Pilot, passenger and baggage	494 lbs.
Fuel and Oil (27 gallons—2 tanks)	256 lbs.
All-up weight	2,200 lbs.
All-up weight, aerobatic	1,950 lbs.
Wing loading, normal	11.7 lbs.
Power loading	16.1 lbs.
Maximum speed (Cirrus Major)	135 m.p.h.
Cruise—70% power	118 m.p.h.
Range	550 miles
Minimum stall	46 m.p.h.
Initial rate of climb	800 ft./min.
Service ceiling	15,000 ft.
Price (1939)	£1,250

F. H. WHEATON

(*continued from page* 3)

of Rijswyk. Mr. Wheaton entertained him at Somerset, and he—you guess—was where. That's correct, Mr. Wheaton's house is at where, so curiously Mr. Uges was at Weare! Work that one out? A good deal of amusement was had at various bars with introductions to Mr. Wheaton's friends; Reine (Mr. Uges) appeared to have a vast liquid cubic capacity—and a Piper Super Cruiser, PH-NDA.

Flying Control at Weston-super-Mare also enjoyed the joke (most unusual), as they make frantic telephone calls to the clubhouse in agitated and officious tone of voice after most landings regarding lights, "T's" and things. F.H.W. fancies they usually fire a lot of Reds or are having a quiet doze. However, they are quite a good lot.

The Auster suits him admirably, due to its low stalling speed, easy starting and simplicity. Visibility is good; it's warm and dry in all weathers too. Only once has he had any qualms—they only very slightly. With Wing Commander Pearce (nice man), late C.F.I. Weston-super-Mare (now C.F.I. Plymouth). When flying in cloud for experience, Mr. Wheaton got the impression of being completely immersed in cotton-wool, and looking over the side at nothing at all, noticed the wing strut was bolted to the fuselage with what appeared to be a mighty slender bolt. He casually inquired of the Wing C. what would happen if that bolt broke, to receive the reply, "If it does, we've had it, so forget it." It *was* forgotten and *didn't* break.

Unfortunately, Mr. Wheaton was involved in a serious car accident on 30th June, 1948, in which he lost an eye and smashed a kneecap. None the less, he returned from hospital and entered a Forced Landing Competition organised at Weston-super-Mare by "Bob" Wardle, C.F.I., for members of the club. To his delight, he tied for fourth place from seventeen entrants, despite the lack of an eye and a leg in plaster. He adds that an Auster is twice as comfortable and visibility much improved by sitting on, or in, piles of cushions, even with locks of hair involved in the trimmer! F.H.W.

A Statement on Supply

THE publishers of the *Light Plane* wish to announce for the benefit of all readers that copies of this magazine are freely available and we are in a position to supply copies to any part of the world, either directly or through our official agents. The publishers continue to receive individual orders from all parts of the world together with many complaints of difficulty in obtaining copies. The publishers wish to state most definitely that no bookseller or newsagent has any right to refuse an order and readers are entitled to insist. In any further cases of difficulty, readers are advised to write to the following agents in the countries concerned:

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In Our Letter Box

Those Tiger Moths

I was interested to read Lewis G. Cooper's letter in the December issue. It would certainly be a good idea for the R.A.F. to pass its old Tiger Moths on to the clubs, and also some of its Proctors. These aircraft may be well and truly worn out, but it would certainly be a cheap form of subsidy and need not cost the country a penny. Two Tiger Moths to each club would make a lot of difference.

Another point is that the R.A.F. and R.N. will soon be needing new communication planes to replace the Proctor and Anson. So why doesn't the Working Party, now reported to be considering a subsidy, get together with the Air Ministry requirements people? This way they could work out a joint specification for a four-place tricycle geared low-wing monoplane that would suit both the clubs and the R.A.F. communication units. This would no doubt mean a boost for the personal plane production version of the same design and would indeed be a spur to the manufacturer.

M. KEEN (Bromley, Kent).

Flight for Fish

I wonder if any reader knows of a good trout stream in Northern England or Scotland which also is near to a landing ground suitable for an Auster.

I would be most interested to hear of any such water where spinning for trout is permitted.

J. L. SHAW

(The Grange, Scholes, nr. Cleckheaton, Yorks.)

From Denmark

Following your invitation in the last line of your article "Operation Cough Cure" on page 10 in the September issue of Volume 2, I enclose with this letter a short—very short—write-up on the Danish achievements in this field. I am sure you will agree that the more people knowing about this, the better. I trust that it may encourage British pilots in their own cough cure flights.

In Denmark there is found a fully organised cough cure organisation. Whooping cough is to be defeated from the air—or rather in the air. So far 600 children have been on these flights, totalling 101, of which the greatest part—56 trips—were flown from Copenhagen, 33 from Nykobing, and 12 from Beldringe, near Odense. The planes used are KZ-III, KZ-IV, KZ-VII, Auster Autocrat, D.H. 89, and G.A. Monospar. The flights are made by Zoneredningskorpset—one of the Danish Ambulance Air Services. Sixty per cent of the children have been cured, 29% slightly better or the same, and 12% have become worse. There is no reason to suppose that this is because of the flight, as one does not know how these would have fared without the flight.

A normal flight has a duration of one and a half hours—half an hour climbing slowly to 10,000 ft. (3,500 m.), half an hour up there, and another half hour returning to the ground. A doctor follows the children on the flights. Any child with whooping cough can go on these flights when recommended by his doctor and provided that the parents want it. Directly connected with the service are four doctors, the leader of whom is Dr. Harpoth.

As was mentioned in your article in the September issue, the children usually go to sleep just after the start. In the height they awake again and cough a bit, but then they go to sleep again.

During the summer of 1949, trips are planned from about 100 airfields throughout Denmark. This is the first step of the fight against the whooping-cough. Something for the R.A.F.? I mean, the R.A.F. has made quite a lot of strange operations in its time, so why not?

I hope you will accept my humble apologies for the belated story—I had not time to do it before, besides the fact that the resultant figures were not formed.

While having caught you attention, I want to compliment you on the *Light Plane*. Just the paper for the private owner or the club pilot. I myself am one of these persons, having flown nothing more powerful than a Proctor—except for ten minutes at the wheel of a DC-4—and as my experience thus is only on KZ's, Austers, Cubs, Hawks, etc., I suppose I am a typical private pilot. If so, I can tell you that the typical private pilot likes your magazine very well, but he might want a bit more "gen" than is to be found in the articles in the Owner Operator series. These are not very much concerned with aviation, are they? Rather a form of publicity. Every plane is not owned by the Windmill Theatre—unfortunately.

Wishing your excellent magazine every success in the future.

JORGEN C. C. ELHOLM, Chairman and Editor of "Aerosport" (Copenhagen, Denmark).

Those Props. Again

I recently had the opportunity of flying an Auster I to which a coarser pitch prop. than usual had been fitted. Comparing it with previous flights in the same aircraft, I noticed that the speed was higher for a given r.p.m.

Your reply to Mr. R. Reynolds (December issue) set me thinking on this point:

"The power output of a normally aspirated engine with a fixed pitch propeller is a function of the r.p.m."—a statement which I would like to contradict.

I have since checked up on this with a Proctor IV having an unsupercharged engine but a c.p. prop. With a fixed throttle setting, the r.p.m. lever was moved from fully "increase" to fully "decrease." Naturally the r.p.m. dropped about 300, but the boost pressure remained constant. The boost pressure gauge being an indicator of power output, it follows that power is proportional to throttle setting and not the r.p.m.

Quite simply, it means that running on a/c. at 2,200 r.p.m. there is higher, perhaps dangerously higher, power output than with an identical a/c. and a relatively fine pitch.

My argument may be a matter of "not being able to see the wood for the trees," but I would like confirmation or otherwise from someone who is really "clued up" on this matter.

Wishing you every success in 1949.

J. A. POTHECARY (Salisbury, Wilts.)

(It is very probable that when an aeroplane of standard design is fitted with an airscrew of coarser pitch than fitted as "ex-works" the cruising speed will be higher. There is no mystery about this as the manufacturers normally fit an airscrew which will provide the best all round compromise between rate of climb and cruising speed, or some such contrasting requirements. In these arguments there is always the danger of forgetting the little matter of airscrew efficiency, which varies at every speed, both of the aircraft and the engine.

The power output of a normally aspirated engine driving a fixed pitch airscrew MUST be a function of the r.p.m., as the power output of an engine on the bench is most certainly a function of the r.p.m. Otherwise, why are we so fussy about static revs. in the ground check?

The "tests" with the Proctor are no proof, as it is impossible to simulate the characteristics of a fixed pitch airscrew with a constant speed unit. The unit will allow the engine to maintain the chosen r.p.m. within fairly wide limits of flying conditions which, were a fixed prop. used, would result in considerable variations in r.p.m. The fact that the boost remained steady was simply because the monitoring effect of the c.p. unit permitted it to do so. A failed engine which is windmilling will register a deceivingly high boost pressure.

Mr. Pothecary should also note that the practice of putting the pitch control to "Full Coarse" and keeping the boost at cruising pressure, or higher, is a most reprehensible practice. A Gipsy Queen might not mind too much, but with a big engine, trouble would follow sooner or later. Should our correspondent become a skipper with one of the Corporations before jets and turbines become universal, he will find himself severely warned about this boost and r.p.m. business by the technical staff before he first takes the air for them.—Eds.).